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1949

Vol. 58

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THE STORY OF SOVIET ARMOR

Russian armor is paraded in Moscow's Red Square
(See page 22)

JANUARY-FEBRUARY, 1949

VOL. LVIII NO. 1

RECONNOITERING

The Coordinating Committee of the Armed Forces Associations

ONE midday recently we cleared the Editorial Office and launched ourselves diagonally across Farragut Square, where stands the statue of the naval hero bearing a benovolent expression completely at odds with certain very evident circumstances which always lead us to anticipate instead a look of revulsion, accompanied by a strident voice bellowing a lusty paraphrase to history—"Damn the pigeons!" On this occasion, as usual, we negotiated the square without event, to enter the Army and Navy Club on the far side.

We're members of an organization known as the Coordinating Committee of the Armed Forces Associations (CCAFA). That somewhat imposing title simmers down into a story that should be of interest to you; a story that has its beginnings about two years ago, when representatives of several of the military associations began meeting in informal session for the purpose of swapping ideas relating to their associations and journals. The thought presented that here was a medium for desirable cooperation on projects of mutual interest.

THE original grouping and initiative came from the services, who set up the fold into which were drawn the arms, thus forming an Army family. During the last year the unification theme has been served through the welcome addition of representatives of Navy and Air Force Associations and their publications.

Formal organization was not attempted, and patently was not indicated. Meetings of the group have been in the nature of informal luncheons at the Army-Navy Club. The various associations and their journals are logically centered in the Nation's Capital, where the fingers are on the pulse. A look around the lively luncheon table at a regular session tags one and sometimes several editorial representatives from the Journals of the Engineers, Signals, Chemical, Transportation, Quartermaster, Ordnance, Medical, Air, Navy, Infantry, Field Artillery, Antiaircraft Artillery and Armored Cavalry. Each of these associations publishes a journal of a style somewhat similar to the one you are reading.

EARLY meetings of this unique group were attended by top level figures in the National Defense field, including Secretary of Defense Forrestal, Secretary of the Army Royall, Secretary of the Navy Sullivan, Secretary of the Air Force Symington, and Munitions Board Chairman Hargrave. These guests were given an account of the activities of the association and in turn reported on developments in their respective areas.

It was here in CCAFA that there originated the idea of a get-together between industry and the Army, which led to the National Industry-Army Day sessions held at Chicago and Dallas respectively in the last two years—and destined for Boston this year—and to the successful regional meetings at Fort Lewis, Washington and Omaha, Nebraska. This close relation between industry and the military is one of the outstanding accomplishments of the small but significant CCAFA.

As might be expected, one man is responsible for much of the activity of the organization. He is Colonel Ludlow King, who was Chairman with such great success in the 1947-48 term that he was held over for a return engagement for the current season. Stemming from the Chemical Corps Association, "Pete" King is retired from active duty and is a member of the Owens-Corning Fibreglas Company.

ALTHOUGH this is perhaps a more fertile organization for the services, in view of their procurement responsibilities, it is equally important for the ground arms, sitting on the using end. And insofar as the publications go, there is here a valuable meeting ground for all. For example, the current season got under way with a distinguished trio of guests, embracing the Army's Chief of Public Information, Major General Bryant E. Moore; Mr. Harold Hinton, Assistant to Secretary Forrestal; and Mr. Stephen Leo, Chief of Information for the Air Force. The schedule is booked for guest visits by key personnel of the Public Information Division, the Historical Division and the Information-Education Section. While much classified material is covered at the closed sessions, and more comes under discussion, these meetings are an important adjunct to editorship, and contribute to the turning out of a better professional publication.

All in all, the monthly get-together is a worthwhile affair. And certainly not a one passes from which we don't roll out draped around a fine luncheon, to amble across Farragut Square on a reverse azimuth, with an expression matching that of the Admiral—and so back to the office, where with a few crumbs we bribe the pigeons to light on the window sills—not on our heads.

The Editor

The U. S. Armored Cavalry Association

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The United States
Cavalry Association
(Established 1885)

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CARDED

ARMORED WARFARE

Considerations of the Past and Future

by GENERAL HEINZ GUDERIAN

When the German Armored Forces broke through the lengthened Maginot Line at Sedan, in May 1940, and reached the Atlantic Ocean and the mouth of the Somme River within a few days, the astonishment even of the professional was aroused by this success. Inquiry into the causes of the defeat of the Allied French and British troops on that occasion has not stopped since that time.

The German success was at first attributed to a supposed superiority in numbers. The French estimated that the German armored strength on the Western Front in May 1940 was 7,000 tanks, to which were opposed, according to French figures, about 4,500 tanks on the side of the Allies. In reality, the Table of Organization strength of the German tanks (including the reconnaissance armored cars) was 2,800. After careful calculation, deducting the reconnaissance vehicles and those vehicles that dropped out during the march on 13 May, date of the crossing of the Meuse, it may be established that the strength was approximately 2200. It was, therefore, not any superiority in numbers to which the Germans owed their surprising victory. Consequently, there must have been other reasons of a decisive nature.

When a battle is lost, it is always the habit to lay the blame first of all on leadership, and to look for mistakes in that quarter. When a battle is won, the number of those who claim credit grows considerably. It follows, therefore, that the responsibility of leadership in the success was just as great on the side of the winners as it was in defeat on the side of the defeated. We must, therefore, look first of all at the *leadership* of the German Armored Forces if we wish to account for the German victory in the West in 1940.

Leadership

The influence of leadership on the German Armored Forces made itself felt long before the war. It consisted in a renewal of the old, well-tried basic principle of Cavalry leadership: *The leader should be well forward.* He should be so located that he can himself see what is going on, and receive directly the messages of his reconnaissance units, thus being able to give his orders rapidly. In the case of large units which march in several columns, he must be located with the most important column. He must in any case always be *in front of his reserve*, otherwise he loses all possibility of leadership.

The armored troop leader must exercise this function personally. He cannot allow himself to be represented by members of his staff. The soldier wants to be able to see his general himself. On the other hand, his staff should enjoy a certain stability, so that lateral and rearward communications and liaison may be maintained and the orders of the commander transmitted to all concerned. From this arises the necessity of separating the staff into a forward echelon, which accompanies the commander, and a rear echelon, for the transmission of orders and messages to the flanks and to the rear.

The forward or command staff echelon must be small and mobile and able to maintain itself on the field of battle. It should, therefore, be mounted in armored vehicles. It must be equipped with the most excellent means of communication.

Communications

The most important means of communication is the radio. Nearly all combat orders in the course of the war of movement in France were given over the radio. Naturally, these orders had to be coded, which required a cipher device in the vehicle of the commander.

Full and effective use of radio for the transmission of orders requires great brevity in their wording. Thus the "command language" for armored units presupposes special schooling.

The telephone, nonetheless, has by no means become superfluous. It was used quite regularly during the mobile phases of the warfare in France and Russia, to insure the flow of communications to the rear. Radio contact alone did not suffice in the long run to insure the transmittal to the rear of orders and messages—especially those orders involved in the control of supplies.

Dietramzell, Germany.

I was much honored by your request to write an article for the Armored Cavalry Journal. I was all the more pleased because of the fact that in earlier years I had many opportunities to read the Cavalry Journal and to profit by this reading.

I have attached hereto a few expressions of my experiences in the last war in the hope that they will at least partly answer some of the questions you asked. That this is not more complete I beg of you to excuse me, because of the fact that I lost many of my notes and drawings and I was obliged to compose this from my memory. I hope, however, to offer to your readers a few facts which come directly from the war and which, therefore, might be of interest to them.

/s/ Heinz Guderian.

But as attacks from the air become an increasing danger to connections with the rear, especially if the important supply lines and their intersections are being sought out by attacks from the air, communications by wire will become less and less dependable, and the recourse to radio communication will become more and more necessary. The high degree of perfection achieved through recent development in radio technique is such as to make it possible to use radio in this manner. The radio telephone in particular facilitates contact between the leader and his troops, provided that proper telephone speaking discipline is maintained at both ends. Brevity and the use of code are indispensable. I feel quite certain that no other system will endure in the future.

Concentration of Power

Mobility of the leadership and the commander's presence in the midst of the fighting tank units was the

Associated Press

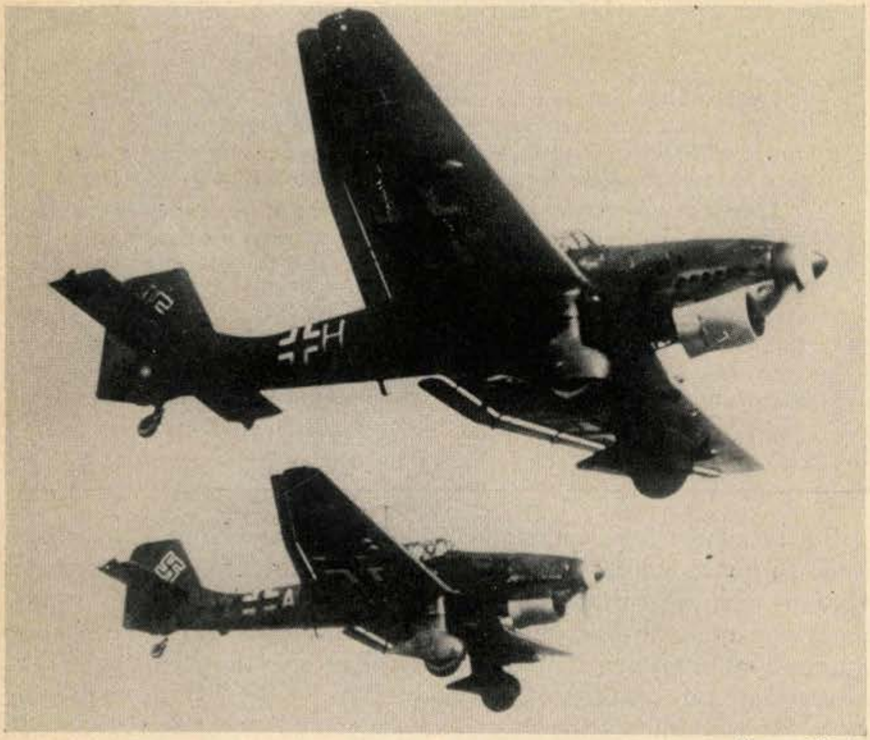
Heinz Guderian was born at Kulm in Pomerania in 1886. He was schooled in a military academy, and entered the army in 1906. Some of his studies were completed at Colmar, where his father, a regular officer, was stationed.

During World War I Guderian rose to the rank of captain, serving for a time in the Ardennes-Sedan area, which was to be of such great significance later on in his career. He was attached in 1919 to the Ministry of War, and was promoted to major in 1927 and to lieutenant colonel in 1931. During a tour as Chief of Staff of the Inspection Section of Motorized Units from 1931 to 1935, including command of the Black Drivers unit, Germany's first regular tank corps, he experimented with the employment of fast armored vehicles.

In 1936 Guderian became a major general, moving from command of the 2d Armored Division in November of 1938 to the post of Army Corps Commander over armored units. His book, "Lookout, Tanks," a summary of the basic principles of tank warfare, was published in 1939.

General Guderian led the German troops into their Austrian occupation in 1938, and in 1939, as commander of the 19th Armored Army Corps under General von Kluge, he put into practice in the invasion of Poland his doctrine of the employment of armor, seizing the Polish Corridor, freeing his native town, and effecting a junction with the German Forces in East Prussia.

Attention next switched to the Western Front, where on 10 May 1940 Guderian commanded the armored forces under von Kleist. The break-through at Sedan and the overrunning of France constitute a milestone in armored warfare. In July of 1944 Guderian replaced Jodl as Chief of the Army General Staff, and was again on the Eastern Front from the fall of 1944 to the spring of 1945 as Commander in Chief of German Forces in the East.



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German successes were the result of air-ground coordination . . .

first of the reasons to explain the great successes achieved by the Germans. Another reason was *the concentration of the tanks in large units and the combination of these large units in armored groups*—later even in armored armies—in areas of decisive importance. Prior to the war our opponents had given thought to the formation of large tank units, but had failed to carry this principle into effect.

The Germans were the first actually to carry into effect the idea of creating an *armored division*. All of the other armies subsequently copied this principle some time before the close of the war.

Organization

The German armored divisions included all branches of the service needed in combat by the tanks themselves for their support: infantry (known at first as "riflemen," later as "tank grenadiers"); reconnaissance troops; artillery; antitank units; engineer troops; signal communication troops; medical detachments; tank shops, and other services of the rear. Particularly a subject of debate was the question of *the relation between tanks and the accompanying infantry*. There was no denial at any time of the need for infantry troops as a part of the armored division; the only question raised was one of proportion. In 1940 the organization consisted of four armored battalions, two rifle battalions and one motorcycle rifle battalion. In 1941, at Hitler's order, the number of armored battalions was reduced to two or three, and that of the rifle battalions increased to four. At the start of the Russian Campaign an additional motorcycle rifle battalion was added. However, the motorcycle riflemen were unable to meet the difficulties imposed by road and weather conditions in Russia. For that reason these battalions were combined with the reconnaissance battalions.

The reduction of the number of armored battalions to two or three per division was regrettable. After all, the tanks constitute the principal weapon of the armored division; and the large, complicated apparatus of the armored division is not worth setting up merely for a feeble tank force. The punching power of the organization in attack diminishes rapidly as the number of tanks is reduced. Our great successes in the West in 1940 were in a large measure dependent upon combination of all of our tanks in a strong division. Only in this manner was it possible for us to overcome the numerical superiority of our opponents. At points where the decisive engagements took place we turned out to be even numerically stronger —as a result of this procedure—than the enemy forces opposing us. Any dissipation of forces is harmful. For that reason a small number of really strong divisions is preferable to a large number of weak divisions.

Probably the correct proportion between tanks and accompanying infantry is one battalion of infantry for each armored battalion.

Proper Balance

However, aside from the question of motorized infantry, careful thought must also be given to the strength of the other branches to be used in support of the tanks themselves, so as to insure proper supporting strength without making the division as a whole an unwieldy organization.

In this connection I have in mind first the *armored artillery*. At the very moment of organization of the tank units I had asked for a self-propelled artillery, but was unable to get it because suitable gun mounts (tracked vehicles) were not to be had. Later the artillery superiors refused to undertake the construction of self-propelled artillery because they did not foresee combat of such a fast-moving nature that motor-drawn artillery would be unable to keep pace with its movement. The first construction of a self-propelled artillery was completed too late to be of real effect before the close of the war.

Prior to the war, the armored artillery comprised only six batteries of four cannon each; light field howitzers, the favorite and most widely used cannon of our German Artillery. After the Polish Campaign, the artillery was strengthened by the following additions: one heavy battalion consisting of two batteries of heavy field howitzers (150mm) and one four-gun battery of 100mm cannon. Toward the close of the war the number of guns in the heavy propelled battery was increased to six in order to have sufficient guns to place in action in spite of losses, and to facilitate displacement forward (leapfrogging) in the course of a fast developing action.

Until the end of the war the armored divisions were able to manage with nine batteries. It is quite likely that this will continue to be an adequate number for divisions having three to four tank and rifle battalions respectively.

The *armored reconnaissance battalions* were originally composed of two armored reconnaissance companies, one motorcycle rifle company and one heavy weapons company (composed of one platoon light cannon, one platoon antitank cannon and one platoon of engineers). The motorcycle riflemen were dropped during the course of the Russian Campaign.

The *armored signal communications battalions* consisted of one radio-telegraph company and one company including both radio and telephone men. These battalions included the signal communications platoons for the brigade commanders of tank and rifle units. Their transportation consisted in part of armored vehicles.

Particularly helpful to the tanks are the *engineers*. These troops must be well trained in the bridging of rivers and the construction of roads over swampy terrain, and in the reduction of minefields and other antitank obstacles. Aside from the engineer battalion, one of which was assigned to each armored division, the armored battalions, rifle battalions, and armored reconnaissance battalions included platoons of engineers to make available technical help when needed. This organization was found to be very helpful.

Unfortunately the German production of tanks never reached the point where the desired equipment could be furnished for the artillery, engineer and reconnaissance units. The effective power of the armored division is proportionate to the number of fully armored units of this sort which are included.

The *antitank units* were originally equipped with 37mm towed guns. The caliber was increased during the war, first to 50mm and then to the 75mm long cannon. In future development, the long cannon on a self-propelled mount will be the most desirable

Speed of Movement

The third factor determining our great successes was *the great speed of our movements*. The day after completing the breakthrough at Sedan in 1940, my armored corps marched a distance of 165 km (approximately 100 miles); and after the breakthrough of the Aisne Front in June of 1940—from the Marne to the Swiss Border—an average daily distance of 100 km (approximately 60 miles) was covered. Prompt exploitation of initial successes during the Russian Campaign prevented an effective defense by the Russians of the Dnieper Line, and made it possible to take Smolensk from them. Simultaneous successes achieved by tank units on the flank of the main effort created conditions favorable to an early continuation of the attack on Moscow. That Hitler failed to take advantage of this opportunity is quite another story.

In any event, great speed of movement was a condition of our great successes during the war. And it was speed of movement that helped General Patton to his outstanding victories on the invasion front in 1944. This particular characteristic of armor will retain its significance, especially in view of the increasing importance of the air arm.

Chasing the Tail

This brings us to the question of whether *speed or armament* should be given preference in making a choice between different types of tank. The late models of German wartime construction indicated that one of these qualities does not necessarily exclude the other. Tiger II (known to Allied troops as the "Royal Tiger") carried very heavy armor, especially on the front, as well as mounting a long 88mm gun; yet it was capable of a maximum speed of 70 km (over 40 mph) with

German Photo

. . . and the massing of armor at points of decisive action.

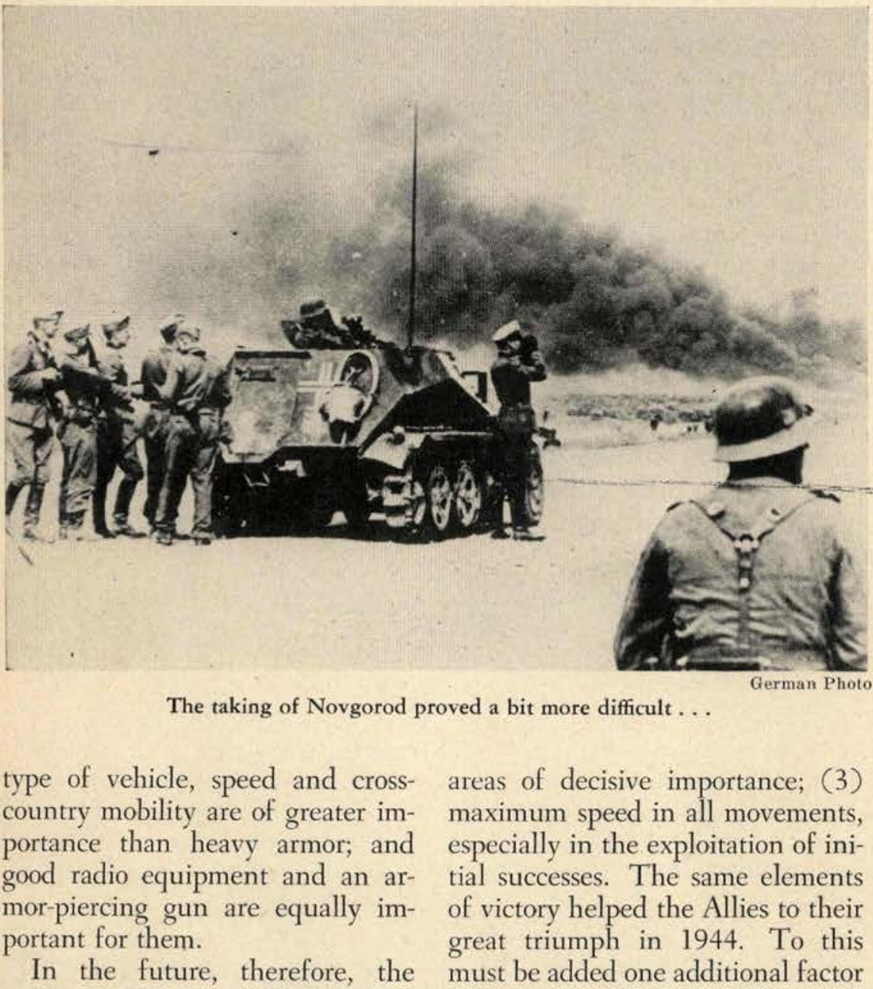
a weight near 70 tons. The "Jagdtiger" (Pursuit Tiger) carried a still heavier armor, in addition to having a 128mm cannon—although, to be sure, this cannon was not based in a revolving turret.

However, a tank of the Royal Tiger class is such a valuable fighting machine that it should not be employed in missions of secondary importance. *Where speed is the predominating factor,* it is possible to get along with vehicles of a much lighter type; for example, the armored reconnaissance cars. For this type of vehicle, speed and cross-country mobility are of greater importance than heavy armor; and good radio equipment and an armor-piercing gun are equally important for them.

In the future, therefore, the practice will be to build light, fast armored reconnaissance vehicles, to be used in combination with the heavy combat tanks, to perform close-range and combat reconnaissance for the tank units, and also to carry out tactical operational missions as a part of the reconnaissance battalions of armored and infantry divisions. Presumably, preference will be given the tracked vehicles over the wheeled vehicle, as the track is better suited to cross-country mobility than the wheel. This is particularly true of Eastern Europe.

The Main Reasons

In summary, our great successes in France in 1940 and Russia in 1941 may be attributed to the following factors: (1) outstanding leadership by generals well forward at the front and equipped with excellent radio communications; (2) combination of tanks in large units, and compact use of these units in areas of decisive importance; (3) maximum speed in all movements, especially in the exploitation of initial successes. The same elements of victory helped the Allies to their great triumph in 1944. To this must be added one additional factor of decisive importance on the side of the Allies—*absolute air superiority*.



German Photo

The taking of Novgorod proved a bit more difficult . . .

The Third Dimension

In 1944, control of the air had passed completely to the side of the Allies. This control interfered with German movements on the highways and the battlefield: almost entirely during daytime, and to a great extent even at night. It interfered with the movement of German supplies, thereby restricting the mobility and combat efficiency of armored units, in addition to restricting the replacement of personnel and equipment. We were forced to march at great depth and with wide intervals, resulting in great dispersion of units on the battlefield. Camouflage became an essential for all troops, including the armored units.

This domination of the air inspired thought of modification of combat methods, suggesting movement and action during the hours of darkness. Night road marches had been a part of training and did not involve any great difficulty. The same was not true of cross-country night marches and night combat. These inspired a fear and timidity that were difficult to overcome.

In the future it will be necessary for any army that does not have air superiority to give a great deal of attention to the problems of cross-country movement and combat at night. Undoubtedly new means will be found to overcome these difficulties better than heretofore.

In this connection I would like to say a few words concerning *antiaircraft defense,* a type of defense which has assumed an increasing importance with the German armored forces. At the beginning of the war each armored division had at its disposal one antiaircraft artillery battalion (supplied by the Air Force) with small-caliber guns. Except for a small number of machine guns for antiaircraft defense, the tank forces had no antiaircraft protection of their own. This equipment sufficed so long as we had control of the air, or at least were not distinctly inferior in air strength; however, beginning with 1943 the antiaircraft protection became inadequate, and we made an effort to construct AA tanks. The first models were rejected by Hitler because of their high silhouette. New plans were designed, but there was not enough time to complete them. Adequate supply of machine guns for AA defense for unarmored troops of the divisions was delayed due to insufficient production.

In the future it will be advisable to build AA armored vehicles equipped with a 30 or a 37mm automatic gun. In addition, it will be necessary to supply all motorized units with enough AA machine guns to protect personnel against strafing.

All of these measures are strictly passive in nature. A powerful air force, trained to operate in conjunction with armor and able to clear the sky of enemy planes, would be far more effective.

The Team Idea

The need for cooperation between air and armor is so evident that it occupied the thoughts of leading officers in the various countries even before the war. This was the case in Germany. However, little practical result came of this thought in view of the fact that Germany had no General Staff of the Armored Forces to plan and to carry out the exercises in air-ground coördination.

While the war was in progress, however, there was greater sympathy among the branches for cooperative effort. Thus, prior to the campaign in the West in 1940, I was able to get together with the Air Commander of my attack sector, and work out an agreement on joint tactics for the assault against the Maginot Line near Sedan—actually testing it out in a map exercise. The plan which we tested in theory proved its great worth in actual practice on 13 May 1940. It consisted of dive-bomber attacks upon the French batteries and strong points, carried out by individual squadrons, and continued throughout the duration of the attack, from 1400 to 2100 hours. Strong fighter employment insured control over the battlefield that day. The result was fully up to expectations. Most of the French guns remained silent until the German assault troops were on the emplacements—undoubtedly because the crews had failed to anticipate an infantry attack while the air bombardment was still in progress. The German Stuka pilots were in an excellent position to observe the progress of the ground troops and to regulate their bomb releases accordingly.

Similarly successful cooperation was attained during the early part of the Russian Campaign. This essential support for the armored forces began to fail with the decline of German air strength. As a result, the fighting effort of the armored forces was made more difficult.

On the Western invasion front in 1944, the Allies had the best opportunity ever for providing their armored units with every desirable support through cooperation with a superior air force. Since more modern equipment had come along, this support took a slightly modified form from the older German method.

Looking Ahead—With Caution

It will be necessary in the future to adapt methods to more advanced conditions. Because of their extreme speeds it will be impossible for jet planes to hover over the tank battlefield for any considerable length of time, as did the old dive bomber. It will be necessary either to use some other type of plane or to effect some other method of cooperation.

A separate and entirely new problem is raised by the existence of the atom bomb. The effect of the atom bomb on the use of armored troops very likely depends upon whether or not the bomb can be used on the battlefield in the vicinity of friendly troops. Available press reports to date indicate that the radius of action of the bomb would preclude such use.

Insofar as the so-called V-weapons are concerned, their restricted accuracy limits their usefulness against tanks, confining their value to action against rear areas. The possibility of their employment against armor would increase proportionately as accuracy is attained.

German Photo

. . . than the taking of Prague.

Everything changes! The commander of the future will have to adapt his strategy and tactics to the instruments at his disposal. He may consider himself fortunate if he is in a position to exert any influence upon the design and construction of any part of his instruments. Precisely because of this condition, it is very risky to venture any predictions bearing upon the conduct of warfare. This consideration has prompted the writer to impose great reserve upon his thought and statements.

New York Times

AMERICAN ADVISORY GROUP AIDS GREECE IN WAR ON GUERRILLAS

by LIEUTENANT COLONEL EDWIN P. CURTIN

WHILE the attention of the world has been focused on Berlin, a small group of Americans—soldiers, sailors and airmen—has been carrying on in Greece a mission of far-reaching strategic and political significance.

Here, where the Truman Doctrine, forerunner of the Marshall Plan, first went into effect, there has been time to see results and to evaluate the contribution to world security of the American Mission for Aid to Greece.

In his fourth quarterly report to the Congress on the progress of the Greek-Turkish aid program, President Truman stated that American aid has enabled Greece "to survive the immediate critical threat to its independence," while admitting that internal security has not yet been fully restored.

That the guerrilla threat has not been completely eradicated in the first year is not surprising. After seven years of war and occupation, Greece was in sore straits and in imminent danger of falling into the Communist orbit. As they had in other countries, Communists had played an important part in the resistance movement along with other political groups. Of all the groups, they were, as usual, the best organized, and in 1944 began their attempt to take over the government of Greece. These efforts culminated in the battle of Athens in the period December 1944-January 1945, when British troops helped the National Government drive the bandits into the hills, thus permitting the Greek Government to re-establish itself in authority.

Great Britain, traditional supporter of Greece for more than a century, continued to furnish aid and to assist in the organization and training of the New Greek Army. But England, too, was having her economic troubles, and on 24 February 1947 the British Government notified the government of the United States that it would be unable to continue aid to Greece beyond 31 March 1947.

On 3 March, the Greek Government made a formal request to the United States for economic, technical and administrative aid. Just nine days later, on 12 March, President Truman gave his now historic message to Congress, asking immediate appropriation for interim aid to Greece and Turkey as vital to the security of the United States.

Lieutenant Colonel Edwin P. Curtin, Infantry, is Public Relations Officer of the Joint United States Military Advisory and Planning Group of the American Mission For Aid to Greece.

American and Greek officers working at the General Staff level: *Left to right:* Colonel Claybrook, Colonel Vlahos, Colonel Bessete, General Kitrilakis, General Thorson, General Pentzopoulos, Colonel Kastner and General Lamaris.

A recent statement by President Truman, along with a visit to Washington by Ambassador Grady, and general discussion of continued aid to Greece, all seem to indicate confidence in the ability of that country to make great strides in the restoration of internal security during this year. Here is an important account of the part being played by our military in the implementation of the Truman Doctrine.

Previously, in January 1947, an economic mission had been sent to Greece to report on conditions in that country. Their report, submitted in April, indicated clearly that the first step toward establishing economic order in Greece was to clear up the military situation. No improvement in Greece's economy could be permanent while guerrillas roamed the hills, raiding towns, sabotaging public works and forcibly recruiting villagers into their ranks.

The American Mission for Aid to Greece was established, and in May 1947 the advance elements arrived in Athens, charged with administering American aid. At first the appropriation was established on an approximately equal basis for economic and military aid, but it soon became apparent that the military situation was more pressing, and additional funds were diverted for this purpose. The military group at this time was headed by Major General William G. Livesay, and comprised Air Force and Navy as well as Army personnel. The immediate problem was to survey Greece's military needs and to work out policies and channels of coordination with the Greek Government, the British Military Mission and the U. S. State Department.

U. S. Army

Lt. General James A. Van Fleet, Chief of the Military Group of the American Aid Mission, has a distinguished record of service in both wars. He is a graduate of the U. S. Military Academy, Class of 1915, and during the recent war commanded the 8th Infantry Regiment of the 4th Division in the D-Day landing on Utah Beach, moving on to command of the 4th and 90th Divisions and XXIII and III Corps.

As the plans progressed, the British Mission retained responsibility for training and organizational advice to the Greek Armed Forces, while the American Mission's job was to furnish material aid for the Greek National Army, the Royal Hellenic Air Force, the Royal Hellenic Navy and the Gendarmerie. The first shipload of military supplies arrived in Greece on 2 August 1947.

By December a planning and policy group was established, and early in January this was further developed into the Joint U. S. Military Advisory and Planning Group (JUSMAPG) to work directly with the Greek General Staff, the Royal Hellenic Navy and the Royal Hellenic Air Force. This is the group which today has the responsibility for advising the Greek Armed Forces.

In February 1948, Lieutenant General James A. Van Fleet arrived as the new Commanding General of the U. S. Army Group, Greece, and Director of JUSMAPG.

At that time it was estimated that there were some 25,000 to 30,000 organized bandits fighting the Greek Government, supported by Albania, Bulgaria and Yugoslavia, and by an estimated 150,000 Communists active throughout Greece. Against this force the Greek Government had an army which had been created out of practically nothing in 1945 and 1946. It must be remembered that the Greek Army which had put up so gallant a fight against the Italian invaders had been destroyed by the Germans. No new blood had come into the army since before the war, and there had been little time for training. Much of the army was dissipated throughout Greece on garrison duty.

Plans were evolved for a campaign against the larger concentrations of guerrillas, aimed at their destruction. These operations through the spring and summer of 1948 resulted in considerable success in spite of apparent weaknesses due to lack of training.

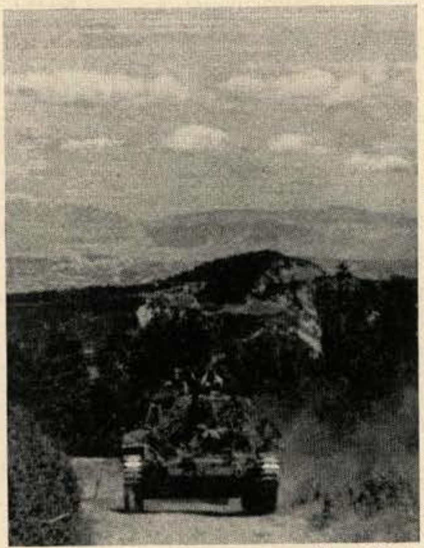
Some 21 operations have been conducted against the guerrillas since January 1948. Three thousand or more Greek National Army troops participated in each of these operations. In addition, hundreds

Harris & Ewing

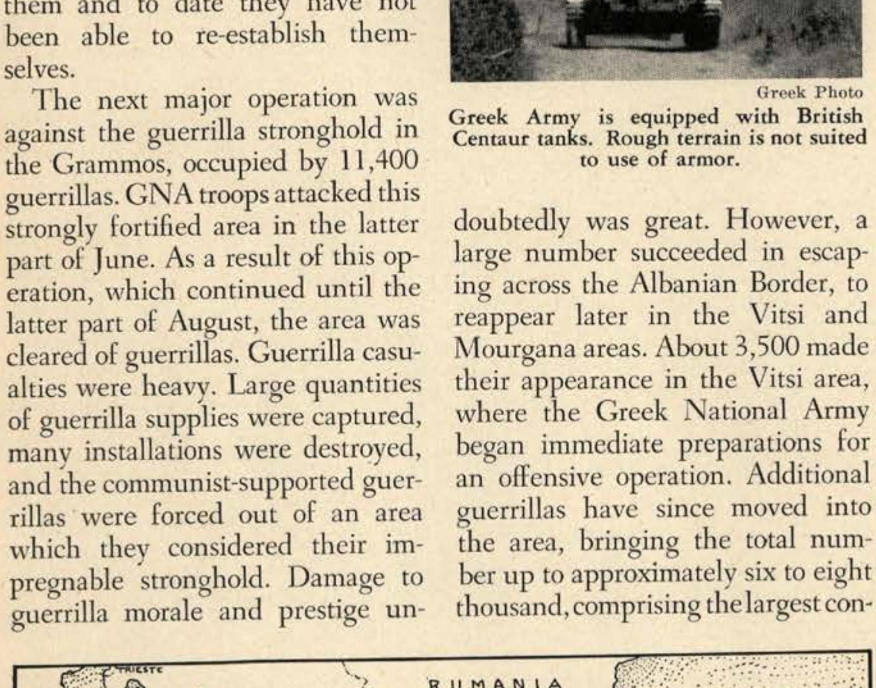
The Honorable Henry F. Grady, U. S. Ambassador to Greece and Chief of the American Aid Mission.

of minor clashes occurred throughout Greece between small GNA forces and groups of Communist-led guerrillas. The largest of these operations were carried out in the Roumeli area during April and May. As a result of this operation, the Roumeli, which had been held by the guerrillas for several years, had been completely cleared. However, the guerrillas are now making a desperate effort to re-establish themselves in this section. Heavy casualties have been inflicted on them and to date they have not been able to re-establish themselves.

The next major operation was against the guerrilla stronghold in the Grammos, occupied by 11,400 guerrillas. GNA troops attacked this strongly fortified area in the latter part of June. As a result of this operation, which continued until the latter part of August, the area was cleared of guerrillas. Guerrilla casualties were heavy. Large quantities of guerrilla supplies were captured, many installations were destroyed, and the communist-supported guerrillas were forced out of an area which they considered their impregnable stronghold. Damage to guerrilla morale and prestige undoubtedly was great. However, a large number succeeded in escaping across the Albanian Border, to reappear later in the Vitsi and Mourgana areas. About 3,500 made their appearance in the Vitsi area, where the Greek National Army began immediate preparations for an offensive operation. Additional guerrillas have since moved into the area, bringing the total number up to approximately six to eight thousand, comprising the largest concentration of guerrillas in Greece.


Greek Photo

Greek Army is equipped with British Centaur tanks. Rough terrain is not suited to use of armor.



ACJ-Bell

Greece is a key area in current East-West differences.

Other Greek National Army forces are occupying recently cleared areas along the border or are engaged in operations to clear guerrilla-occupied areas along the border. The importance of these operations can be seen when it is realized that about 50% of the guerrillas in Greece are concentrated along the border. The large quantities of weapons, ammunition and other military supplies captured in the recently cleared areas give a good indication of the extent of outside aid being given the guerrillas from across a border which measures approximately the same distance as the Western Front in World War II from Switzerland to the North Sea, and which the guerrillas cross at will for refuge, tactical reasons, rest, reorganization, training and hospitalization, as well as supply. To cope with this open-border problem, and also to stamp out bandit activity within the country, the Greek National Army now has eight infantry divisions, three separate brigades and four commando groups, organized into three corps, and totalling 146,000 officers and men. All are organized on British lines and use, for the most part, British equipment. It should be noted, however, that most of the British type of equipment is furnished through American aid.

In addition, there are in the National Defense Corps, a home guard organization, some 50,000 troops, organized into 96 battalions for local area defense to free GNA troops for major operations.

The GNA has no armored force as such, although some use has been made in current campaigns of the British Centaur type tanks. The terrain in the northern areas, where the major battles have been going on, is so rugged that the use of armor is extremely restricted.

A small but effective Air Force has been developed, equipped with British Spitfires, American AT-6's and C-47's. They have furnished excellent support to GNA ground operations throughout Greece.

The Royal Hellenic Navy carries out mine sweeping and patrol operations, provides sea lift, and whenever the situation permits, furnishes gunfire support for land operations.

There has been some criticism in the press of the world to the effect that eight divisions should be able to overwhelm some 25,000 guerrillas. One answer, in addition to the ordinary difficulty of anti-guerrilla operations, complicated by the open-border problem, lies in the terrain over which the Greek National Army must fight its war. Greece is about the size of Alabama, but 83% of its total land area of 50,147 square miles consists of rugged mountains. The mountain areas provide some of the most rugged terrain to be found anywhere in the world; ideal terrain for the resistance of the tough, well-trained, ably led guerrilla fighters. The Greek Army is forced to move over mountain trails, using pack mules for supplies and transport, only to find the bandits have faded across the border when their destruction becomes imminent.

American liaison officers serving in the field are unanimous in their praise of the individual Greek soldier. General Van Fleet, at the close of the Grammos battle, stated publicly: "I am more and more amazed by the stamina, spirit and courage of the Greek soldier. The army has improved greatly during the Grammos battle and is today at least twice better than in February." On the other hand, the performance of the average Greek soldier, an intelligent individualist, is highly influenced by the morale factor and tends to decline sharply when the military outlook and the internal domestic situation are obscure or seemingly hopeless. Psychological fatigue is an adverse morale factor in a small country which has been more or less continuously at war for eight years.

To carry out its mission, the JUSMAPG includes advisory groups down to division level. The

Greek Photo

General Van Fleet and Greek officers look things over in the field.

Athens headquarters personnel work on the Greek General Staff level, offering advice and recommendations. It must be emphasized, however, that the Americans function solely in an advisory capacity; there is no command function, and all plans and operations are Greek plans executed by the Greek National Forces.

Brigadier General Reuben Jenkins is Assistant Director of Operations and Planning. In the headquarters, senior American officers perform the usual staff functions, both for their own organization and as advisors to their opposite numbers on the Greek General Staff.

The Navy Group of JUSMAPG is headed by Rear Admiral J. A. Snackenberg, while the Air Force Group is under Brigadier General William A. Matheny, USAF.

At each corps headquarters in the field, there is an American advisory group headed by a colonel and at each division there is a similar, though smaller detachment headed usually by a lieutenant colonel. These detachments include representatives of the G-2, G-3, G-4 and Signal sections to work closely with the corps and division staffs. Altogether there are approximately 350 American officers and men in Greece.

While little mention has been made of it in this article, the economic side of the American Mission plays a tremendous part in the reconstruction of Greece. The military group is only one part of the over-all mission. The Honorable Henry F. Grady serves in a dual capacity as U. S. Ambassador to Greece and as Chief of the American Mission to Aid Greece. Mr. John Nuveen is Chief of the ECA Mission administering Marshall

(Continued on page 34)

Greek Photo

Greek Army troops fighting in the Grammos Mountains.

ARMORED CAVALRY LIGHT

Its Organization As Derived From Its Missions

by COLONEL C. H. REED

FOREWORD

In the art of war, technique progresses but principles remain the same. While the role of Cavalry in modern war is still much the same as it has always been, its motorization and greater fire power have increased greatly the scope of that role. This fact was clearly demonstrated in the difficult missions which were performed by the American Armored Cavalry Groups in the European campaigns of World War II. These missions included the traditional roles of reconnaissance, protection of flanks, pursuit, exploitation, and the screening of large gaps between divisions and corps. Modern equipment affording greater fire power and mobility, coupled with progressive as well as aggressive techniques by these armored cavalry units, made the performance of these missions highly successful over the relatively great distances encountered in the European campaigns.

M. S. EDDY,
Lt. Gen., U.S. Army.

Fort Leavenworth, Kansas.

THROUGHOUT military history the need for effective mobile troops has always been apparent. Their presence on one side and absence on the other often spelled victory to the possessor. By their use the alert commander added breadth and scope to his operations and speed and surprise to his tactical moves.

Modern wars have indicated increased need for such troops, not in all theatres, true, but in the greater part. Future wars, caused by clashing ideological and economic interests are certain to involve many nations and therefore many types of terrain. Most of the theatres thus presented will provide some extensive areas traversible by motors. Success in such theatres, assuming comparable air power, will depend upon manpower, firepower and full logistical support. But—a factor in the production of manpower and firepower on the battlefield is speed, and this speed, this mobility, must be purposely built in.

The ideal, from a purely tactical viewpoint, would be to build this mobility into all our units, our infantry divisions, armored divisions and their supporting units. But to build this degree of land mobility into all units would place an insuperable burden on the logistic support of a field army and would bankrupt our national economy in the attempted production of vehicles and armored gun carriers. The profitable approach is to select certain units in which the maximum land speed and battlefield mobility are to be built in, together with comparatively heavy firepower—these units then to be given as primary missions those battle assignments calling for speed, firepower and effective communications, and which will be unprofitable to undertake with infantry and armored divisions. Such an economical solving of tactical problems will, in any future war, be vital. Never again can we expect to fight a "fat" war. Any power that challenges this nation will, before committing itself, be so strong that to assure its defeat we will have to strain our last economic muscle, not only to equip ourselves, but to so equip our allies that together we can meet mass manpower with massed firepower. Under the stringent conditions this will impose, we will not be able to afford to send two medium tanks to do the job of an armored car; or a truckload of infantry to do that of three men and a quarter-ton vehicle. Neither our logistical nor our manpower strength will be capable of supporting this waste.

At the start of World War II the German Army had achieved by far the greatest then-existing speed and mobility in their Panzer and Panzer Grenadier Units. They gained virtually complete success; as the campaigns of Poland, France and the early Russian Campaign bear witness. But this mobility was not maximum mobility. Further, in producing it for part of their forces, Germany's productive capacity reached its limit. The bulk of the infantry and artillery remained relatively immobile, restricted to use of horses—the gap between the respective mobilities of the Panzer formations and the rest of the army was too wide. No large units with maximum mobility were ever formed. The closest approach made was in the reconnaissance battalions in their Panzer formations and a very few of their infantry divisions. Results of this lack were fatal. On the great fronts of Russia their Panzers could not spread widely enough to perceive and intercept infiltration by the relatively slower Russian forces. On the Western Front, meeting the more mobile forces of the Allies, they were unable to screen the gaps between their divisions. What mobile forces they had were driven to a state of breakdown by the too numerous missions assigned; equipment was too heavy, communications too sketchily provided; the missions could not be performed. The clearest recognition of the problem appeared in the American forces where were developed the Cavalry Reconnaissance Groups and their integral squadrons (mechanized)—the Cavalry Reconnaissance Squadrons (Mecz) of the Armored Divisions and the Cavalry Reconnaissance Troops of the Infantry Divisions. No detailed listing of the various missions assigned these units is possible here. To those interested, reading of the report issued by the General Board convened at Bad Nauheim in the fall of 1945 is recommended. In this report will be found many examples of the successful performance of the missions which follow. The best recommendations for this type of mobile unit are also found in the Bad Nauheim reports, where the various Army and Corps commanders expressed their enthusiasm for the mechanized cavalry units. Only from the commanders of infantry divisions came any criticism. They almost unanimously stated that one troop in an infantry division was not enough—they recommended a squadron.

MISSIONS. Before attempting a discussion of the desirable number of these mobile units in our troop basis, together with their organization and equipment, let us establish a base for all of these requirements by an analysis of the missions to be performed. Examples of these missions are best found in the Bad Nauheim Board Report, resulting from operations in the European theatre. Let us divide these missions into primary and secondary. From a careful review of the primary missions a firm general base for assignment, organization and equipment can be drawn. Some special equipment may then have to be added to permit proper performance of the secondary missions.

Colonel Charles H. Reed is a graduate of West Point, Class of 1922. He has served with various cavalry units, and is a graduate of the several Cavalry School courses and of the Command and General Staff College.

During World War II Colonel Reed participated in the campaigns in Normandy, Northern France, the Ardennes, the Rhineland and Central Europe, commanding both Tank Destroyer and Tank Battalions, and serving as Executive Officer in an Armored Regiment with the 11th Armored Division. He was assigned to command of the 2d Cavalry Regiment, Mechanized, in December of 1942. He commanded the 2d Cavalry Group, which later became the 2d Constabulary Regiment, from April of 1944 to August 1947. Colonel Reed is now Secretary of the General Staff, Office of the Chief, Army Field Forces, Fort Monroe, Virginia.

PRIMARY MISSIONS.

1. Pursuit and exploitation.
2. Flank protection.
3. Screening of gaps between units.
4. Security of overrun areas occupied by a hostile population or guerrilla bands.
5. Reconnaissance.

Pursuit and Exploitation. Americans are acutely aware of the profit-motive in any operation. In a campaign, in a battle, the profit, the pay-off comes in the exploitation. But the troops that can win the "toe to toe" slugging match of sustained combat and force a penetration are not, per se, the best for exploitation. Infantry divisions, even with extra transportation, are too slow and extremely vulnerable in movement. The armored division is ideal in its power, speed and destructive ability. Its liabilities rest in the excessive logistical support needed, the limited range of its tanks in continuous performance and the weight of its tanks. Bridge trains must accompany the column, also great amounts of gas and oil. Despite its ability to rupture secondary defense lines and defeat enemy reserves, the armored division is relatively limited in speed and scope of operations.

The armored-cavalry regiments (light) provide an ideal tool for speedy and deep exploitation; with lighter vehicles, their bridging and gas supply problems are infinitely less. Their destructive power, combining speed with firepower, is greater than that of any other unit on a man to man basis. Their ability to rupture secondary lines and defeat reserves is less than that of the Armored Division but this should be partially countered by their earlier arrival deep in enemy territory. A cavalry regiment (light) is capable of penetration 50 to 100 miles into enemy territory and of maintaining itself there for several days unsupported. Ample historical examples of this can be found in the European Campaign of 1944-45.

What were and are the characteristics necessary for the unit to perform this mission?

a. Speed
b. Destructive ability

c. Lightness of equipment
d. Long range radio

Flank Protection. Modern armies in their rapid advances, in order to take advantage of presented opportunities, must often leave their flanks exposed and by so doing provide access by the enemy to their long supply lines. This calculated risk must be taken, but some measure of protection consistent with the known threat must be made. The detachment of infantry and armor is seldom possible, and neither, when available, are well equipped for the duty. What is needed is not massed defensive strength close to the wing of the Army or on the exposed supply lines. Rather a far-flung screen should be established, advanced as far into unknown territory as possible to give adequate warning of enemy threats. Here is an example where space must be traded for time. This screen should be supported by reserves capable of rapid movement to any ingress threatened. Often the screen may extend over flanks 50 to 75 miles in length. It should be pushed a minimum of 20 to 25 miles away from the flanks. Such examples can be found frequently in the European Campaign—both in Russia and in France and Germany. Successful protection was afforded by infantry divisions and armored divisions. However, the wear and tear on these divisions was excessive. Equally successful protection was provided for the American Army by the Armored-Cavalry Groups. Despite many attempts to pierce cavalry flank protection no instances occurred in which damage to the Corps or Army was inflicted.

Again what characteristics are necessary to perform this mission?

a. Speed (for dispersion and advancement of the screen).
b. Complete nets of radio communications, long and short range, to give warning of threats.
c. Defensive ability (to delay and cause enemy deployment).
d. Lightness of equipment.

Screening of Gaps. Here is a very similar mission, in performance, to flank protection. Again the ability to disperse widely and assemble quickly at a threatened point is the key to successful performance. Again the screen should be advanced as far forward as possible to secure ground in which to cause enemy delay. Here again space must be traded for time. However, the maximum advancement that occurs in flank protection should not be reached. This mission was one most generally performed by the cavalry groups (and squadrons) in France and Germany—allowing concentration of the armored and infantry divisions on the more crucial part of the front. In other words, economy of force. The gaps covered were from 10 to 30 miles wide; successful performance was the rule. Frequently, when heavily threatened, these screens were reinforced by infantry and armor. In only one instance did such a cavalry screen fail to hold and delay the enemy advance for a sufficient length of time to be reinforced. More frequently the threat was broken completely by the cavalry reserves.

Again consider the characteristics needed:

a. Speed again for dispersion and reassembly.
b. Complete nets of radio to give warning of threats.
c. Defensive ability (to delay and cause enemy deployment).

Security of Overrun Areas Occupied by a Hostile Population or Guerrilla Bands. In the movement across Germany, particularly the latter stages, some available mechanized cavalry groups were directed to this duty. Later, during the occupation, nine constabulary regiments (mecz, cavalry regiments, modified) performed the greater part of the police duties. Infantry and armor are again at a disadvantage, as too expensive in manpower and equipment and not capable of wide dispersion. Many small patrols prevent sabotage. Large consolidated groups cannot prevent guerrilla activities or sabotage. Witness the difficulties experienced by the German armies, lacking rapid light units, in their occupation of and withdrawal from Russia and Poland.

Again recount the characteris-

U. S. Army

The Reconnaissance Platoon of the New Armored Cavalry Regiment Light—D Company, 3d Armored Cavalry Regiment.

tics necessary:

a. Speed (for patrolling).
b. Complete radio nets.
c. Lightness (for economy of operation).

Reconnaissance. It is with some misgivings that this mission is approached at all. It was the sharpened rock on which the vessel of mechanized cavalry almost foundered before making a successful voyage in combat. At the time of the original organization of the cavalry reconnaissance (mecz) regiments, 1942-43, there existed in the War Department a theory that corps and divisions should roll forward to meet the enemy over wide expanses of territory; preceding them would be a screen of cavalry (mecz) to reconnoiter and to execute the twin sister of reconnaissance—counterreconnaissance. This view found definite expression in the T/O's and T/E's which named the units as cavalry reconnaissance troops and squadrons (mecz). Again in the published doctrine, reconnaissance and the nebulous sister, counterreconnaissance, were stressed as primary missions. Worse yet, the doctrine prescribed that the lightly armored reconnaissance units would avoid combat, except where necessary to gain information. As actual experience demonstrated, faultier doctrine and name could not have been devised. What practical theatre commander would have admitted to his troop basis large units of this type to perform this specific and rare mission? It was further obvious that distant reconnaissance could be and was being performed by the Air Force, assisted by dropped personnel equipped with long range radios, and that battle reconnaissance would be performed by the unit in contact. What division commander would permit a group of eager-eyed, bantam-riding strangers to go plowing around ahead of his advancing lines?

U. S. Army

The Tank Platoon of the New Armored Cavalry Regiment Light, Tank Company, 2d Battalion, 3d Armored Cavalry Regiment.

For the mechanized cavalry, there had been prescribed a mission and a doctrine based on false premises. Unfortunately these missions and doctrines were taught at the Cavalry School and gained wide acceptance among the younger and newer officers.

Fortunately, army and corps commanders in Europe did not accept the doctrine. They assigned, and expected performed, the primary missions listed above, plus missions involving even more combat. And even more fortunately the regimental (later group) commanders had never accepted the doctrine and had trained their units for combat in the expected roles—not only in reconnaissance. With the exception of a few squadrons and troops (in armored and infantry divisions) trained by less experienced officers only for reconnaissance, all went well. The mistrained units learned, the hard way, on the battlefield.

Reconnaissance and counterreconnaissance will be performed, but generally in conjunction with other missions. (European records show 2% pure reconnaissance missions.)

What characteristics are desirable to insure their proper performance?

a. Speed
b. Lightness
c. Effective long and short range radio net
d. Moderate firepower to cause enemy deployment and pierce light screens.

Before summarizing the characteristics required for performance of primary missions, let us briefly present the secondary missions which will sometimes be assigned.

1. *Position Defense.* The requisites here are definitely firepower and staying power. The armored cavalry regiment, light, is capable of performing this mission creditably. However, unless the position is a wide one in which it can utilize its mobility in moving to counterattack, it is definitely handicapped. Too much of its manpower is wasted in drivers, mechanics, and other specialists who must remain at their normal tasks to prevent deterioration of equipment. Its efficiency is probably only 75% of that of an equal infantry force.

2. *Dismounted Attack.* Here coordinated, strong, firepower and manpower are called for. The cavalry has the firepower but again, due to its equipment, lacks available manpower. As in position defense, it here loses use of its two

great multiplying factors—speed and communications. Its efficiency drops and probably equals 50% of an equally well trained infantry force.

3. *Fighting in Cities.* Here firepower of the lighter type is called for and the mission can be well handled with the assistance of the good communications net existent. However, when the mission is performed in a section of the city subjected to artillery and mortar fire considerable vehicular loss is to be expected.

4. *Protection of Supply Lines.* A mission easily performed using the factors of speed, communications and light firepower. A wasteful mission, however, as the heavy weapons (40% of strength) are not generally utilized.

5. *Area Defense Against Airborne Attack.* A rare, though theoretically profitable mission, as speed, communications and quickly assembled firepower are the factors needed after a careful planning of the defense has been made. A mission several times assigned in Europe but never performed due to enemy failure to drop. Where enemy has a well defined capability of airborne attack, the mission should become a major one for this type cavalry unit, which possesses in the highest degree the factors necessary for its successful performance. Infantry is too slow and armored divisions too heavy for normal assignment.

6. *Offensive Action from an Established Air-Head.* This is a projected mission whose consideration should be approached with a fortunate combination of caution and imagination. It will be classed as a primary mission upon the solving of the complicated problems of the air lift. These are being vigorously approached from two viewpoints—decrease in weight of equipment and increase in capability of air lift. It is as yet unsolved. Despite the presence of a cavalry reconnaissance company as part of the normal attachments of the airborne division, there is as yet no capability of its full use. What can be transported is in effect only the equal of an infantry I and R platoon.

But a careful consideration of the desired characteristics shows that they are the same most desired in the primary missions:

a. Lightness (for air-transportability and cheap air support).
b. Speed.
c. Communications.
d. Offensive firepower.

Summarizing from the above only the characteristics required for successful performance of the primary missions we find that:

a. Speed occurs five times.
b. Lightness of equipment occurs three times.
c. Complete long and short range radio nets occur four times. Long range alone, once.
d. Destructive, offensive ability occurs twice.
e. Defensive ability occurs twice.

Speed and lightness of equipment go generally together. However the lighter wheeled vehicles cannot develop speed, particularly in bad weather, unless a very complete road net exists. The lighter vehicles can transport smaller weapons, men and communications, but heavier, slower and more expensive vehicles are required for greater armored protection and heavier guns. From this a conclusion must be drawn that a combination of wheeled and tracked vehicles must exist within the squadron, at least. Further, that excessively heavy vehicles do not belong in the unit at all.

Communications are listed as essential in all missions. Primarily the necessity is for voice and code radio within the squadrons, operable from 20 to 30 miles under most weather and terrain conditions. Further both squadrons and regiments should be equipped with a minimum number of long range radios capable of reaching the next higher headquarters, often 100 miles or more away.

Destructive offensive ability occurring twice should be considered in connection with the defensive ability, also appearing twice. The defensive ability is best gained by weapons that will cause early enemy deployment and hence delay. This points to self-propelled artillery which can be quickly moved to, and employed at, the point of danger. Also, for defensive ability, tanks are required which can upset enemy thrusts by counterattack. These same tanks will afford also a maximum amount of destructive offensive ability. But tanks and assault guns, being heavy, cannot be the sole dependence. With the wheeled and lighter tracked vehicles bearing the men to initial contact and engaging in the majority of the fighting, there must also be offensive and defensive weapons. These are machine guns, mortars, rocket launchers and the individual small arms of the soldier. Here it is well to stress a poorly understood point. To be effective the mechanized cavalry troop must be multi-armed and the soldier habitually multi-trained in weapons. The condition does not exist in the infantry where a soldier bears one weapon into combat and uses that throughout any one fight. The cavalry troop, weak in manpower, must be rich in gunpower. Within each vehicle there is a choice of weapons, within the platoon a choice of many; the trooper uses the desired weapon at the desired time. The mortar man may fire the mortar first, then engage the enemy with a rifle. The rocket launcher crew, having disposed of an enemy armored vehicle, returns to the destruction of the foot troops with a machine gun. This flexibility of weapons available for use makes possible the desired destructive or defensive firepower, not normally possible with so few men.

Now let us consider the framework into which our various weapons and vehicles are to be fitted. Since in the operation of armored cavalry (light) the availability of supports and reserves to move to threatened points is a cardinal operating principle, the triangular structure carries an immediate appeal; two platoons committed, one in support, and so on up the ladder of units until we reach two squadrons (or battalions) committed, one in reserve. Further since the commitments of cavalry units are generally extended over long periods of time the triangular structure provides for a rotation of units impossible or awkward with a dual organization. In Europe the troops and squadrons had a triangular organization. The group, however, had only two squadrons. This resulted in any group reserve that was retained weakening badly a committed squadron. The regiments also should have a triangular structure.

The question of organization and assignment of the supply and maintenance elements is a much debated one. Should these elements be in the squadrons or in the regiments? Much can be said on either side. However, two truths should carry the greatest weight. First, the squadron headquarters, operating far from any additional support, moves too rapidly for maintenance and supply elements to remain with it constantly. Detachments must be made to guard it when in the squadron area and its effectiveness is reduced by continual displacement. Secondly, the entire time of the squadron executive is usually absorbed in herding the enlarged column about. Those considerations point to regimental assignment of the elements.

Under the considerations discussed above the T/O's and T/E's of the Armored Cavalry Regiment, Light (with its subordinate units), T/O&E 17-51 have been drawn up by the Office of the Chief of Army Field Forces, approved and published by the Department of the Army. A fine and workable organization has been arrived at that can perform the major missions expected of it.

ORGANIZATION. The organization is triangular throughout. The regimental headquarters controls three battalions; each battalion is provided with a small tactical headquarters and headquarters company, three reconnaissance companies, a medium tank company, and an Howitzer ~~assault~~ gun company organized for employment as a self-propelled artillery battery. Each company has three platoons. Maintenance, supply and medical personnel are present in the regimental service company and regimental medical detachment. A battalion section is provided for each battalion, which can be detached for functioning with the battalion when desirable.

Strength of Regiment—Aggregate is 2883. Each reconnaissance battalion has an aggregate of 784.

Two airplanes are provided for the regiment and two for each battalion for command, control and liaison.

Within the battalion the ratio of men to vehicles has been increased to better than 4 to 1 compared with 3⅓ existent under the old T/O & T/E.

EQUIPMENT. Only in equipment does one find much deviation from the ideal. Most of the difficulty here lies in the lack of a fast economical wheeled vehicle that can carry a gun capable of coping with any armor. This lack resulted in placing two tanks light, M-24 in each reconnaissance platoon. Since the quarter-ton vehicles must depend on the tanks for supporting fire, the platoon is too restricted in its speed and radius of action. The development of a proper lightly armored car will obviate this difficulty. Further, in the medium tank company the M26, Medium Tank is used. While giving desirable destructive fire, it is doubtful if the additional weight is desirable in the reconnaissance battalion. The development of a light tank with 76 gun will remove this difficulty.

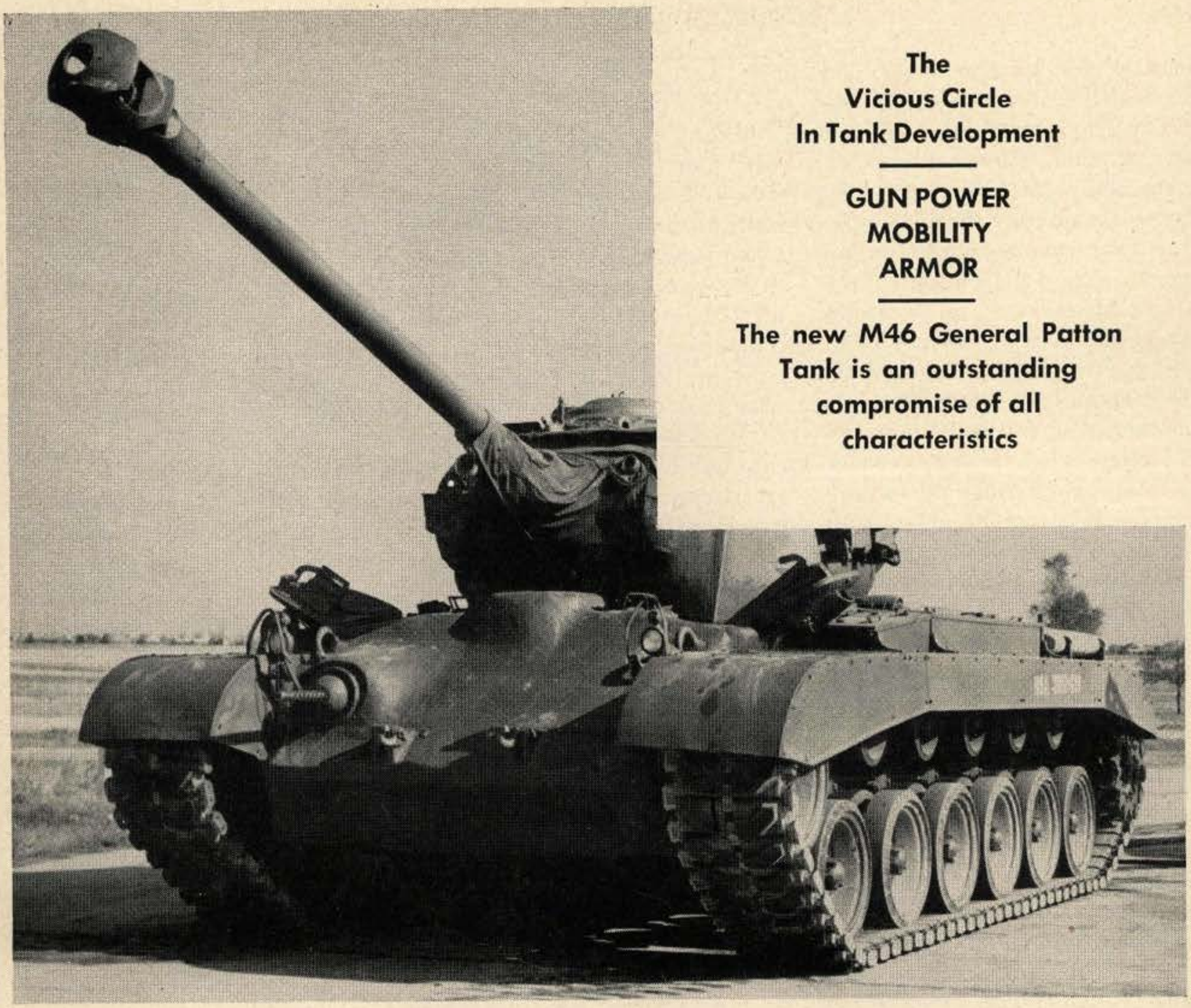
The assault gun company is to be equipped with self-propelled 105 Howitzer, M45, a desirable improvement over the 75 Howitzer in the former organization. The reconnaissance platoon has been increased from its former weak strength of 30 men to 39 including a rifle squad in an armored utility vehicle, M44, and a mortar section in two ¼-ton trucks with trailers. The latter item is probably the weakest part within the platoon. Quarter-ton trucks dragging trailers are not safe transportation in the dangerous areas traversed by cavalry platoons. A better solution, probably quickly arrived at by all platoon commanders, will be to put the mortar in the utility vehicle, lose the trailers, and use the occupants of the extra quarter-tons as riflemen.

The result of our organization is in general the most workable, potentially powerful unit of armored cavalry, light, ever produced. With proper combat training it can perform all of the missions previously discussed.

Some armored cavalrymen, including the author, still object to a few words appearing in the published T/O's and T/E's, particularly the still dangerous and deceptive "reconnaissance" appended to the battalion and company. Also, the substitution of the battalion and company for the familiar squadron and troop. Later changes may correct these unintentional blows at the revered tradition of the cavalryman, now armored but still imbued with the cavalry spirit.

Within the projected troop basis the assignment of light cavalry units follows the pattern of World War II. Infantry and airborne divisions have assigned or attached a reconnaissance company somewhat strengthened. The armored division contains the normal reconnaissance battalion. These are probably ample. However, the basis for assignment of the cavalry regiments, light, to field armies is still that used in Europe—one regiment

(Continued on page 35)



The
Vicious Circle
In Tank Development

GUN POWER
MOBILITY
ARMOR

The new M46 General Patton
Tank is an outstanding
compromise of all
characteristics

Trends in Tank Development

by COLONEL H. H. D. HEIBERG

CARDED

THE military characteristics of a modern tank can be resolved broadly into three factors, namely, gun power, mobility, and armor protection. Since these factors unfortunately are antipathetic, any tank design must be a compromise of the three. In addition, there are certain over-all size and weight limitations imposed by the necessity for road, rail, and water movement of tanks and in some instances for their air transportability, which impose further limitations on design.

Fundamentally, the tank is just another step in the age-old conflict between the offense and the defense. Developed during World War I, the first tanks were designed to break the four-year defensive stalemate which trench warfare had created. With the opposing forces strongly entrenched and wired in behind interlacing bands of machine-gun fire, and backed up by powerful concentrations of registered artillery, any movement of men on the battlefield suffered crippling casualties. The tank then appeared, armored to protect its crew from front-line weapons and shell fragments, armed with machine guns and light cannon, and capable of negotiating shell holes, wire obstacles, and trenches. This armored monster returned the balance of power to the offensive, though its full capabilities were not realized due to the frequent mechanical failures which these early vehicles suffered.

During the years following the first World War the major effort in tank development was directed towards improving mechanical reliability of the vehicle, and little thought was given to armor or armament. As the reliability and radius of action of tanks increased, a role beyond the assault phase opened for armor; this role was "exploitation," and so the theory of employment of armor approached closely the cavalry doctrine.

Of the many theories advanced during this period on defense against tanks, that advanced by

General Adna Chaffee during the Plattsburg Maneuvers of August 1939 had probably the greatest merit, although at the time it received little consideration. His contention was that to defeat a tank successfully, an antitank gun must be at least as mobile as the tank, and its gun crew must be protected against fire from the tank in order to deliver accurate fire against such a mobile target. A weapon designed to satisfy these requirements would be, simply, another tank.

The tanks which Hitler used to defeat Poland and France and to drive the British from the continent of Europe were vastly superior in speed, range, and reliability to the World War I tanks, but they had not been improved greatly in armor and armament. These tanks, nevertheless, were more than a match for the defensive measures which opposed them. Obstacles could be bypassed or breached, and the emplaced antitank guns were of little value after their position had been exposed. Seldom could they be massed quickly enough to oppose a major tank attack.

It was not until tank met tank in force on the Libyan Desert that the armor and armament of tanks began to receive as much consideration as the mechanical development of the vehicle had been receiving. Here started the gun versus armor battle that has plagued the Navy for so long with battleships and is now the major headache of the tank designer.

Lacking the advantage of three years' combat experience which our enemies possessed, the United States entered combat in World War II with tanks that were inferior in armament and armor to those which they opposed. For a brief period in Libya the early American "General Shermans" (M-4, Medium Tank) in the hands of the British dominated the battlefield, but during the Tunisian Campaign the German "Tiger" (Mk VI), with a superior gun and heavier armor, appeared. When later our 76mm gun was mounted on tank destroyer and M-4 tank, the Germans had superior guns ready for their more heavily armored "Panther" (Mk V) and "Tiger" (Mk VI) tanks, and again we were outmatched in armament and armor. So it continued throughout the war with the result that our ultimate defeat of German armor can be attributed more to our numerical superiority in tanks and air than to any superiority in quality of armament or armor.

The President of our Field Forces Board Number 2 writes of tank development in this active decade embracing the World War II period. Balanced against the articles on German and Soviet armor, here is some excellent material to round out the pattern.

ABOUT THE AUTHOR

Colonel H. H. D. Heiberg is a graduate of the U. S. Military Academy, Class of 1918. He is also a graduate of Basic and Regular Courses at the Cavalry School and of the C&GSS. In the period 1921-31 he served with the 6th, 1st and 10th Cavalry Regiments, was instructor in Cavalry-ROTC at VMI, and in mathematics at West Point. In 1931 he joined the detachment for Mechanized Cavalry Regiment then en route from Camp Eustis to Camp Knox, where he organized the Combat Car Platoon equipped with four Christie Combat Cars, T1. Later Lieutenant Heiberg reorganized this unit into Troop C, 1st Cavalry, Mechanized, which was issued the first of the Combat Cars, M1.

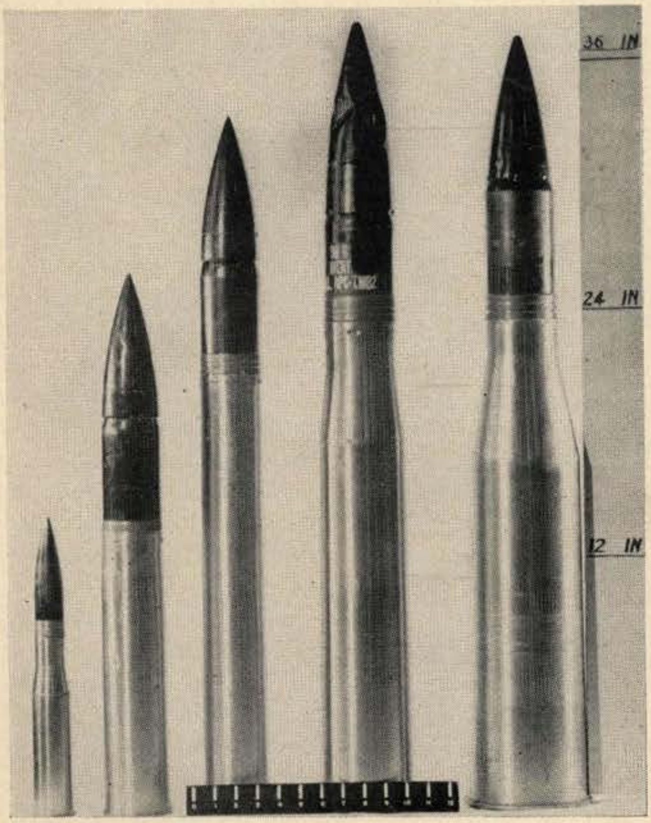
In 1939 he became aide to Brigadier General Adna R. Chaffee—then commanding the 7th Cavalry Brigade, Mechanized—soon organizing and commanding its 7th Reconnaissance and Support Squadron, which came into being on 1 June 1940. Following a six-month tour overseas in 1942 with the First Armored, Colonel Heiberg returned to become G-3 of III Armored Corps, moving a year later to the ETO as Chief of the Plans Branch, First (Twelfth) Army Group for the duration of the war. In August 1945 he returned to the States to assume the duties of Chief of the Armored Vehicle Branch, Developments Section, AGF. In early 1946 he moved to the post of A C of S, Plans, of Caribbean Defense Command, then A C of S of the Command, a post he held until his return in midyear to the assignment as President of Army Field Forces Board Number 2 at Fort Knox, Kentucky.

Based on the experiences of World War II our postwar concept of tank employment accords major emphasis to gun power and mobility, in that order, with armor protection a secondary, though important, consideration. Further qualifications, however, require a definite balance between these conflicting factors by establishing minimum performance standards for each.

Gun power having attained primary importance, the tank is now designed around the gun, rather than the gun mounted in a previously designed tank chassis, which was the case with most of our World War II tanks. Keeping in mind that armored units must first gain superiority over enemy armor to secure freedom of action, then the primary function of the tank gun is to defeat enemy tanks; its secondary function, to destroy enemy personnel; and its tertiary function under certain very limited situations is to reinforce artillery fire. Satisfying the anti-personnel and artillery requirements is comparatively easy since a gun of 75mm or larger caliber and of comparatively low muzzle velocity will fill the bill. The problem of defeating armor, however, requires that the projectile reach the target with sufficient energy to penetrate the armor. This energy is expressed in the familiar formula for kinetic energy, $K = \frac{1}{2} MV^2$, where

RECENT TANK AND TANK GUN AMMUNITION DEVELOPMENT

HEADING UP THE DECADE.
The Medium Tank, M-3, developed in 1940.
(Not to scale.)

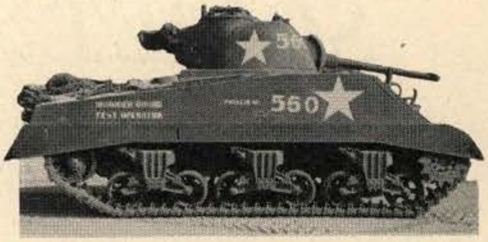


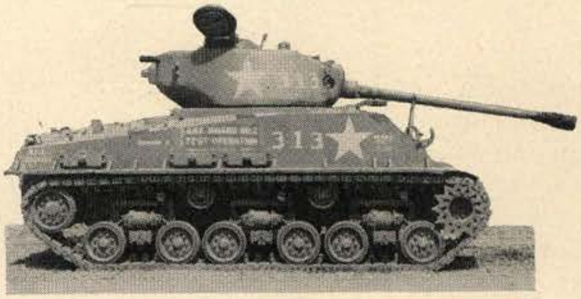
TANK GUN AMMUNITION.
Left to right: 37mm; 75mm; 76mm; 90mm (M-3 gun) and 90mm (T-54 gun).

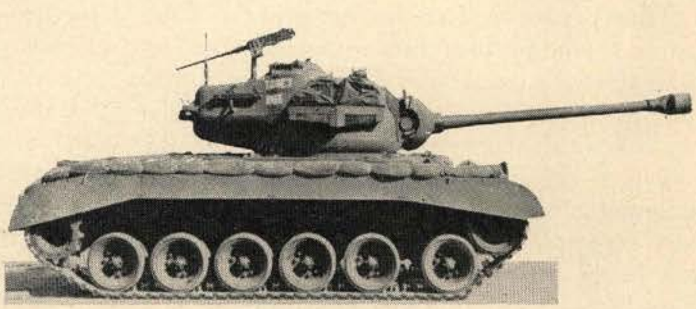
K represents kinetic energy or penetrating ability of the projectile, M its mass or weight, and V its velocity. It is obvious that since the V factor is squared, the greatest increase in penetrating power can be obtained by increasing the velocity of the projectile. This also has the effect of decreasing the time of flight which is highly desirable when firing at a moving target because it reduces the effect of an error in predicting the course and speed of the target. To obtain this higher velocity, however, gun tubes must be lengthened, chambers increased to accommodate the increased powder charge, and the recoil mechanism must be larger to absorb the greater shocks. All this tends to increase the size and weight of the gun and enlarges the space necessary for ammunition stowage and for serving the piece. At a certain point it is more economical in space and weight to increase the caliber of the gun and the M (mass) factor of the projectile while accepting a lesser velocity, than to continue to increase the velocity of a smaller projectile. One inescapable fact remains; that as the demand for penetrating power increases, the size of the gun and ammunition increases. This results in an increase in the size of the fighting compartment within the tank and finally an increase in tank size and weight. Until there is some revolutionary development in gun design or ammunition or both, this cycle must continue.

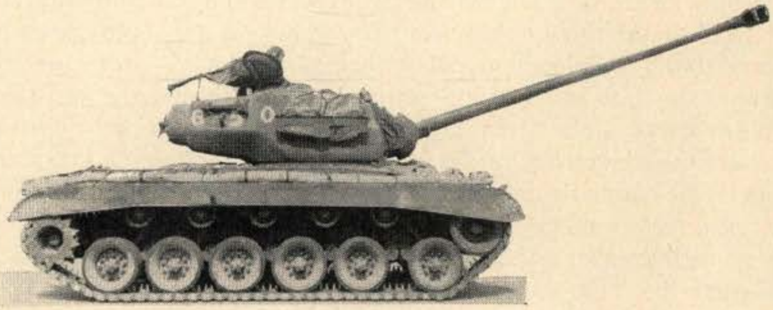
Mobility, the other factor of major importance in our tank design, is used here to connote strategic mobility, tactical mobility and agility, mechanical reliability, and radius of action. It is greatly influenced by the horsepower-to-weight ratio of the tank, and the ground pressure. Just prior to World War II, because this mobility factor had received top consideration, the performance of tanks was generally good. During the war as the requirement for bigger guns and more armor added weight to the tank, the need for increased horsepower was felt. With the engines then available, however, increase in horsepower could only be effected by increasing the size or number of the tank engines, which required a larger engine compartment and added weight to the tank while improving the over-all horsepower weight ratio only slightly. The net result was that we finished the war with tanks that were not up to our present standards of performance. Postwar development has now produced a series of engines and transmissions especially designed for tank service which are more compact, lighter, and have greater horsepower than those previously in use. This has the effect of permitting the tank to mount a bigger gun and carry more armor for a given weight and performance, than was previously possible.

Armor protection has been relegated to a secondary position in our factors of tank design, but with reservations. These reservations, to avoid return to the comparatively thin-skinned destroyer type, prescribe certain minimum protection for each class of tank. This requirement is generally met in basic design by a combination of thickness and slope of armor, with increased thickness when the established weight-horsepower ratio permits.


Medium Tank, M4A3 w/75mm Gun, developed in 1942.


Medium Tank, M4A3 w/76mm Gun, developed in 1944.


Medium Tank, M26 w/90mm M-3 Gun, developed in 1943.


Medium Tank, M26 w/90mm T-54 Gun, developed in 1943.

A new tank has been developed under the foregoing concept, incorporating several new developments which if proven satisfactory will be further developed for application to other classes of tanks. Based on the expected performance of this tank, we can predict that the trend in tank development is toward a more powerful, more accurate gun in each tank class with mechanical aids to fire control and service of the piece which will make the fire more effective. Tank performance and ease of operation and maintenance will be generally superior to present models in the hands of troops. Armor protection will be greater in each class though the over-all weight of each tank, because of more efficient engine and transmission design, will be only slightly greater than the present models. In other words the tanks under development are designed not with the sole idea of overmatching any specific types of foreign tanks but with the object of producing the most efficient possible combination of gun power, mobility and armor in each weight class. The new General Patton tank is a major step in this direction.

The Story of

SOVIET ARMOR

CARDED

by GARRETT UNDERHILL

First in a series of three articles on Soviet Armor, covering the "Early Days," the "Middle Ages" (the 1930's), and the War Years—a significant evaluation of background on one of the Big Three armor-producing nations of the World.

"IT IS an unalterable historical fact that Russia is to be credited with the invention of the tank."

This astonishing statement keynoted a 1947 Soviet summary of armor development. Strange as it may seem, no better keynote could be found for any Western study of the story of Soviet armor. For these words speak volumes. They not only further the postwar Red policy which seeks to instill a feeling of "Soviet patriotism"—and which therefore credits the Russians for important developments which antedated the Soviet regime. They betray the fact that the growth of the Soviet armored arm has been influenced by many factors besides strictly military and technical ones. They hint at the existence of national, group, and personal inferiority complexes—complexes arising from the relative positions of Russia and the West in the fields of industrial accomplishment, and till lately in the field of military accomplishment. The student of history can detect in these few words a strong scent of personality clashes, of pride, prejudice, patriotism, and politics.

The statement—diametrically opposed to a view taken only a year earlier in the official *Journal of Tank and Mechanized Troops*—is in itself an example of the Soviets' ability completely to reverse their views almost overnight; and to do so without having to furnish rhyme or reason. The fact that the Soviets consider it necessary to claim credit for the tank is important; it is a sign of the emphasis they have always put upon psychological factors affecting fighting spirit—and the design of their combat equipment. The narrowness of the "party line" the sentence expresses indicates the limitations under which Soviet engineers, technicians, and soldiers must work; it suggests the extra pitfalls which make forward-looking soldiers' and engineers' ordinarily difficult paths, even more hazardous. The finality of the word "unalterable" conveys a sense of the dread compulsion which has so often "inspired" Soviet soldiers and engineers to achieve the impossible. Indeed, the statement is a sample of that successful Soviet policy of dangling a carrot in front, and snapping a whip in the rear—a policy which in strictly military matters has taken the form of daring leadership and absolute compulsion.

Remarkable as it may seem, the Soviets have somewhat of a case to back their claim of being first with a practical tank. In August, 1914, a master machinist in a Riga factory proposed a track-laying armored combat vehicle. It was built and tested in June, 1915. Since the British "Little Willie" (forerunner of the first British service tank) wasn't tested till September of that year, and since France's first Estienne tank wasn't then built, there is something in the argument that the Russians had the first working model of what came to be the common-or-garden tank.

This Russian "tank" was a strange affair. As built it was a fast but tiny one-man bug-like vehicle. The upper part of the suspension was housed in the hull. Like the later U.S. Christie tanks, this Porokovshchikov job had tracks that could be removed, permitting the tank to travel on wheels on roads for higher speeds.

In the test model that was completed, the driver sat with the upper part of his body exposed. Although information so far available furnishes no sure clue, it is possible that the test model was a scaled-down version of a tank big enough to house a crew. It is known that the test model was improved and, by waterproofing, made into the first amphibious tank.

Porokhovshchikov got this far and no further with his tank. It was, the Reds tell us, turned down by a "servile War Ministry"—an organization they hold to have been too prone to deprecate Russian ideas, and too ready to accept foreigners' proposals. Mr. P's only consolation was that his clutch design was later used on the Soviet-made copies of the Renault tank.

In view of Porokhovshchikov's name, it is perhaps just as well that it was General Swinton who really put across the tank. With such a handle as his, Mr. P could hardly have expected to have his name ring throughout the Western World, no matter what he did.

Among the other proposals for a tank in Czarist Russia was a Captain Lebedenko's. A Martian tricycle-

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The author wishes to acknowledge the invaluable assistance of Mr. Nicholas Corotneff in the vast amount of research work on this article.

like contraption with two giant spoked wheels 82 feet in diameter, and a small steam roller in the rear, this Army officer's "tank" had a girder-like frame topped by a turret. Although the precise purpose for which it was designed is not stated, obviously it would have been highly vulnerable.

Lebedenko sold his "tank" direct to the Czar. With a wooden model, he demonstrated on the Czar's desk how the vehicle would climb obstacles—which in this case were the big volumes of the *Laws of the Russian Empire*. The project was approved and a full-scale version readied by August, 1915. At the outset of the tests, the "tank" ran into a big birch tree, knocked it down, but bogged down in the ground. The Soviets say that the skeptical War Ministry used this incident as an excuse to abandon the project forthwith.

Interestingly—in view of the Soviet tank industry's later connection with the aircraft industry—Professor Zhukovski ("Father of Russian Aviation"), and A. A. Mikulin (now a prominent designer of liquid-cooled airplane engines) were associated with this tank proposal.

It would appear that Mr. P deserves much credit for his work. He wasn't travelling in such distinguished company as Lebedenko. It must be remembered, too, that Russia had none of the Holt caterpillar tractors which, as prime movers for British heavy artillery, had inspired Generals Swinton and Estienne.

Though they are proud of Mr. P, the Soviets cannot adduce any such evidence of Russian forethought as remarkable as the 1911 tank proposal by Austria's Burstyn. Nevertheless, they challenge by implication this officer's place in history. They say that a man by the name of V. Mendeelev that same year had a plan for what they call a tank. They do not adduce any such positive evidence as Burstyn's remarkable German patent (No. 252,815, of 1912—taken out after he'd gotten the run-around from the Austrian War Ministry). Anyway, an effort to match Burstyn just on the 1911 date is in essence hollow. Burstyn (a technician rather than a combat officer) first had his idea back in 1903, as the result of a destroyer joy-ride while he was chief of a telegraph station at Austria's Pola naval base.

The Russians, even by Soviet claims, were slow on the basic development which underlay the successful tank concepts of World War I. According to the record, no Russian tried a caterpillar tractor until 1880. Then Fedor Abramovitch Blinov built a steam-powered job not heretofore recognized by Western literature. There is no evidence to indicate whether he conceived his tractor independently, or whether he knew of previous work by Cowan and others in Europe. Anyhow, nothing came of Blinov's tracked tractor, either. The world had to await Benjamin Holt of California.

Significantly, the Soviets are as silent as the tomb about the early work of Kegresse. A mechanic in Czarist Russia, he became manager of the Czar's garage in Petrograd in World War I; when the Revolution came, he fled to France. In 1910 Kegresse took the Holt idea, and turned it into a flexible rubber-half-track. He added fabric to strengthen the rubber, and lugs to take the drive mechanism.

Originally Kegresse was not concerned with creating a cross-country vehicle. It was the poor roads and the snow that bothered him—the snow and mud that have always been on the minds of Soviet tank engineers. The war caused Kegresse to consider military applications of his half-track. In 1915 he brought forth his first model, which resulted in a 1916 order of 300 half-track assemblies for installation on armored cars. Some were completed by the Reds. They were installed on British Austin and Italian Fiat chassis, armored in Russia by the big Putilov plant. Meanwhile Mr. K had lit out for France, where his work with Citroen (France's Ford) brought forth a line of half-tracks, and led directly to the familiar U.S. half-track line.

As their interest in half-tracks indicates, the Russian Imperial Army was an early bird so far as recognition of the armored car goes. As early as 1900 the artillery bureau (in Russia the artillery arm has always done an ordnance job of design and manufacture, and still handles small arms as well as artillery) worked on a steam-powered armored car. Designed by an engineer named Lutski, this Dvinsk car was underpowered and too heavy. But interest in armored cars continued, although the Imperial Army wasn't very alive to the possibilities.

Since graduating from Harvard, Garrett Underhill has followed a career in journalism, except for three and one-half years in the Army, three of them with the War Department General Staff. He is now a Reserve officer. Specializing in Russian small arms, of which he has perhaps the outstanding private collection in the country, with items ranging in date from 1815 to 1944, his studies on Russian arms have appeared in several publications.

Prior to the war Mr. Underhill spent four years with *Life* magazine as a military correspondent. He is again serving *Life* in that capacity, while specializing in his own work.

Bachrach

Garrett Underhill

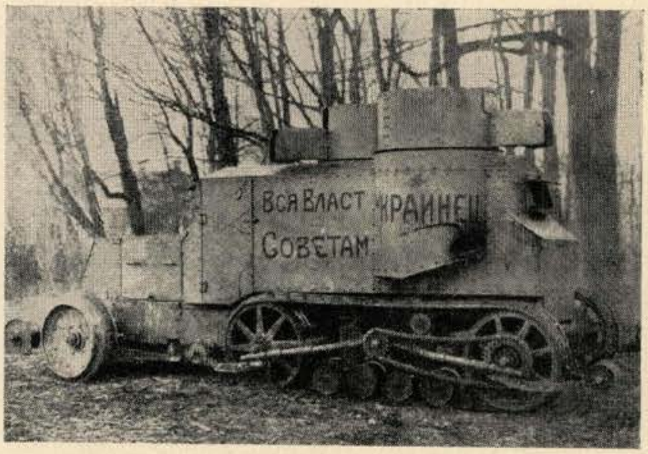
During the Russo-Japanese War of 1904-5 the Russians ordered 36 of the French Charron armored cars. They accepted only one, though such vehicles would have been most valuable in suppressing the type of civil disturbance of which the 1905 Revolution was a forerunner. (The Reds later set great store by armored cars, and made every effort to win them over in order to put across the 1917 Revolution.)

Russia built its first homemade car in 1913, at the Russo-Balt factory. It formed its Automobile Corps at the outbreak of war, but worked mostly with imported cars, and especially with foreign truck and passenger car chassis armed and armored in Russia. One American observer found that this armoring was strictly a scratch job; an Austin armored by the famous Putilov Plant had such poorly made joints in its armor that five of its crew were quickly massacred, once the car got into action.

Those who have previously heard the story of Russian armored cars will wonder how it is that other information on early Russian and Soviet armor development hasn't been made public before this. The fact seems to be that this information has lain shrouded by an "Iron Curtain" to no small extent created by Western indifference to the exploitation of available information on military subjects (on the part of some), and inability to do such work (on the part of others). Ignorance of the Russian language, and of how to locate the right Russian sources (and of how to exploit them), is no doubt to a large extent responsible for this state of affairs. It is by no means a new condition. It was one highlighted by Winston Churchill when he took as the title for his World War I Eastern Front history the words: *The Unknown War*.

To those familiar with the details of Russian military and armament history, there is nothing very surprising in the fact that the Russians were working on a tank idea concurrently with, and independently of, the British and French projects. Although the Imperial Army could hardly be described as a live, progressive organization in which every soldier and civilian stood on his merit alone, the fact is that members of the Army often displayed that capability for very original (if not actually wild) thought which often causes the label "mad" to be applied to a Russian. There can be no doubt that in spite of aristocratic and bureaucratic top-hamper, the old Imperial Army's and Navy's soldiers, sailors, arsenal engineers, and master mechanics set up a pretty good record for pioneer work.

It is important for Americans—who are prone to think the Soviets industrial upstarts, like the Japs—to know that the Russians were making artillery before Columbus discovered America; and that Tula Armory (founded in 1589) was expanded into a great small-arms factory in the early 1700's. Imperial Russia's trouble was not that she didn't have age-old establishments to produce military essentials like artillery and small arms. It was that this effort remained primarily a government one. Though it shifted to civil control during the 19th Century, throughout the 1700's the Urals mines, factories, and workers were literally the property of the chief of artillery. Until a comparatively late date Russia lacked the vigorous capitalist enterprises which brought such rapid industrial progress to the West in the 19th Century. The independence and expansion of what private enterprises there were, were hampered by government regulation, and by graft and monopoly possibilities. Industrial flexibility —both for rapid emergency expansion, and for the production of new weapons—was therefore limited; an important conditioning factor in the growth of any new development like armor.



THE AUSTIN-KEGRESSE —1918.
Bearing the motto "All Power to the Soviets," and the name Ukrainets.

Few realize the smart work often done by the officers, men, and civilians connected with these government establishments, and even by people in the War Ministry. The first practical machine gun—the Gatling—was purchased by the Russians in quantity from Colt's Hartford plant after the U.S. Civil War. While U.S. and European armies remained indifferent to it, it played a role in Imperial Russian expansion into Central Asia, similar to that played by the Winchester rifle and the Colt revolver in the winning of the U.S. West. The Imperial Army was also the first to give real emphasis to the Maxim machine gun—the weapon with which the Germans revolutionized warfare in World War I. In 1902 the Russians adopted for their cavalry the light, air-cooled Danish Madsen machine gun. Had they figured out the right tactics and technique and T/O for it, its introduction could conceivably have prevented the development of the trench warfare conditions which made necessary the tank.

Imperial Russia also had ideas in artillery. The Putilov 76mm of 1900 (later the M1902) anticipated the needs of warfare far better than the famous French Model 1897 "75." The design, construction, and Crimean War performance of Russia's Kronstadt coast forts greatly impressed American observers, who considered them the best of the day.

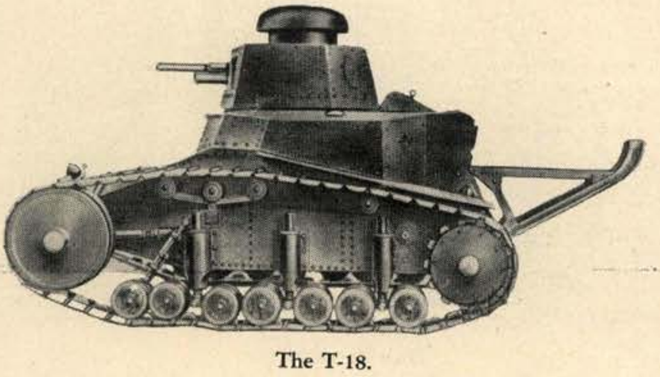
While the Soviets seem much upset that the Imperial Army didn't actually put tanks into service, and failed to take up the caterpillar tractor, there were good reasons why the Czarist ministry did not. In Blinov's day the artillery arm hadn't gotten around to the design and manufacture of any very heavy, really modern pieces. Horses and manpower were plentiful; tractors weren't yet needed for draft.

When Mr. P and Captain Lebedenko came up with their tank ideas, the War Ministry was failing abysmally to produce such basic essentials as rifles, automatic weapons, and artillery. So long as the troops were in a mood to cheer each fresh wagonload of artillery ammunition (often scarcer than hens' teeth), it was hardly time to think of trying to build tanks. And while it might be true that armored motor gun carriages could have multiplied the effectiveness of existing artillery through increased mobility, the problem of procurement of the carriage would have been more than a headache—as the reader will discover.

Of course it is true, as the Soviets charge, that as the 19th Century merged into the 20th, the War Ministry tended to favor foreign ideas and weapons. Especially in the 20th Century, it liked to buy its munitions abroad. The reason was simple. Committees, officials, and inspectors got free junkets, entertainment by foreign firms, and (in more than a few cases) outright graft. Fortunately for early Soviet efforts at tank building, the Imperial Navy patriotically travelled in exactly the opposite direction. It sought to build up Russian facilities, though it tended to discourage private enterprise, and keep facilities within the Admiralty empire.

Obviously, the blame for not making the most of subordinates' pioneering efforts cannot all be laid on the doorstep of the War Ministry. Not a few of the innovations came to nothing because technology hadn't yet made possible a successful working model. For instance, armored vehicles had to await a good internal combustion engine: hence the failure of the Dvinsk steam car.

A more important reason for the failure of pioneering efforts was the Imperial Army's tendency to adopt developments before it had worked out practical tactics and technique. The stillborn attempt to introduce the Maxim and Madsen machine guns—a failure due entirely to misuse—might even be said to be characteristically Russian, for it will be noticed that the Soviets have displayed a similar tendency to be foresighted on weapons, and shortsighted on the tactics they must employ. Indeed, the tremendous Soviet tank program of the 1930's, and the effectiveness of what then were the world's foremost designs, as late as 1941 were badly compromised by the lack of proper armored organization and tactics.


The T-18.

The Russian predilection for the new and novel was fully unleashed when the Soviets came to power. The professional Russian soldiers, the "military academicians" (service school professors), and the various engineers all got an opportunity to sell new ideas. (Contrary to the belief of many Westerners, the Red Army took over the civilian and most of the officer cadres of the Imperial Army.) Many engineers no doubt stayed with the new regime because the restraint of the previous one had chafed them; their sense of inferiority in the face of Western progress had made them patriotic. They wanted a chance to show their ability, and felt that the new regime would provide it.

At first, however, their ambitions were strictly circumscribed by the immediate and urgent needs of the Revolution of 1917 and Civil Wars of 1918-1921. The open nature of these conflicts, and especially the lack of artillery and shell-firing heavy weapons, generally favored the wide employment of armored cars. This was a great era for weapons which could dominate supply routes, because the extreme fluidity of the wars restricted them largely to the axes of these routes.

The Imperial Army had made some use of armored cars, even as fire support vehicles in assault upon field fortifications. The Reds not only used them in mobile warfare, but on more than one occasion duplicated these strange and (to the Westerner) foolhardy tactics. The Reds made every effort to convert available trucks and cars to armored vehicles, and made considerable use of the resultant improvisations. Some conversions were thorough jobs undertaken by the various steel plants and heavy-duty machine shops. Prominent among the latter were the railway construction and repair plants. But many improvisations amounted to little more than mounting a rough boiler-plate box on a truck, with sides high enough to protect men lying prone. The effectiveness of such vehicles may be held in question, but it is well to recall that among the developments which proved most useful in that type of fighting was the Tachanka—a fast horse-drawn wooden cart, from which a machine gun could be fired with the draft team at the gallop. If the Tachanka was a great military asset, there wasn't much call for 6-mile-an-hour tanks.

In the unusual conditions of the Civil Wars, armored trains were of much greater military importance than tanks and armored cars. They were in effect the contemporary equivalent of self-propelled artillery. Not only that: they had integral "armored infantry, which detrained in assault." With far more mobility than any other armored vehicles then extant, the trains were considered most valuable for patrol, railway security, and fire support in assault and defense of positions along railways. Around 300 were used in the Ukraine and the Caucasus alone.

The Czarist Russians had no tanks, although they ordered (but failed to receive) a set of drawings for the Anglo-American Mark VII heavy before they folded. In 1918, the Whites had some tanks, but made very little use of them against the Reds. By 1919, the Allies had plenty of war surplus for the White armies. More tanks appeared, and were used by White armies in the drive against Petrograd (later Leningrad), and in the South at Kherson, Taganrog, and Tsaritsyn (Stalingrad).

As the Reds began to capture tanks from the Whites, they put them to use—which has caused the Soviets to quip that Winston Churchill (famous for his support of the White armies) is the real father of Soviet tanks. By the end of the Civil Wars, the Reds had picked up between 80 and 100 tanks. The majority were light 6-ton French Renaults, and British Mark V heavies (often called Ricardos by the Soviets, from the name of the engine). There was a sprinkling of light British Whippets. But the number and use of tanks on both sides was extremely limited.

The proudest exploit of these "trophy" Red tanks during the Civil Wars was at Polotskoi, where the Reds were fighting the Poles. Here, on July 4, 1920, some British Mark V heavies supported the 33d Red Infantry Division. With the aid of an armored train, this tank-infantry team cracked the Polish line, claimed 700 prisoners—and what was far more important in those days, 8 artillery pieces and 20 machine guns.

The Red tank-infantry-armored train team was again used down in the Caucasus, in the "liberation" of Tiflis from the Whites, on February 25, 1921. The Reds also used tanks at Volochai. Russian-made Renaults were used in Poland, in the Ukraine, and in the Caucasus.

The term "Russian-made Renaults" actually covers mighty little ground. The Russian-built version of the French 6-ton light tanks was inspired when a captured Renault from the Petrograd front was brought to the Sormovo factory for repair. The factory's engineers and technicians—belonging to what had been a rapidly growing locomotive and railway factory near Bryansk, southwest of Moscow, were anxious to try and build their own tanks. In 1919 the decision to build some copies of the Renault were made. The engine was built by the Moscow shops which later became the AMO plant. The armor came from the Izhora plant—one just south of Petrograd at Kolpino, where the Imperial Navy had made armor, boilers, and ship machinery. The rest was made at Sormovo, where the components were assembled.

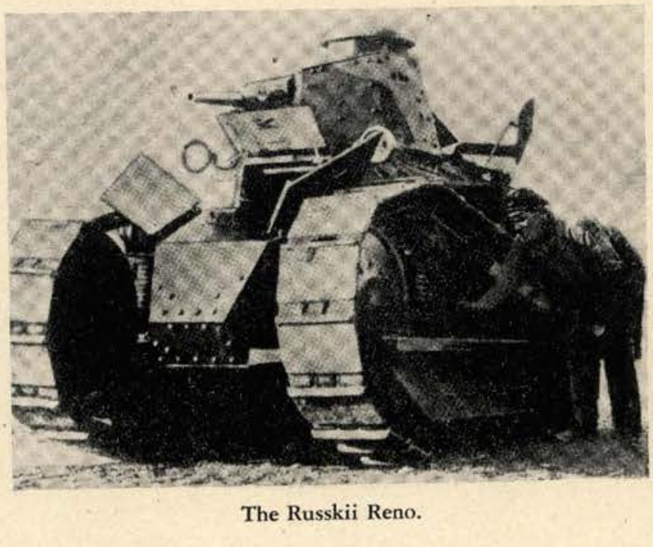
On August 31, 1920, the first tank was tested. On the following December 1—over a year from receipt of the production green light, Sormovo declared complete their first copy of a fully engineered French production model. It was a great occasion; Lenin himself was informed by telegram—for the chiefs of the Soviet state have always been vitally interested in the development of Soviet armor. The plan was to build by the next spring five platoons ("battle units" the Reds called them) each of three tanks. Within each platoon, two tanks were to be machine-gun armed, and one to have a short 37mm gun.

The story of the production of the Russian Renaults is an important one for Americans. Only two years before the Russian engineers embarked on their project, the U.S. in December, 1917, received a sample French Renault, complete French drawings, and a Renault engineer. Finished tanks started to come through in October, 1918.

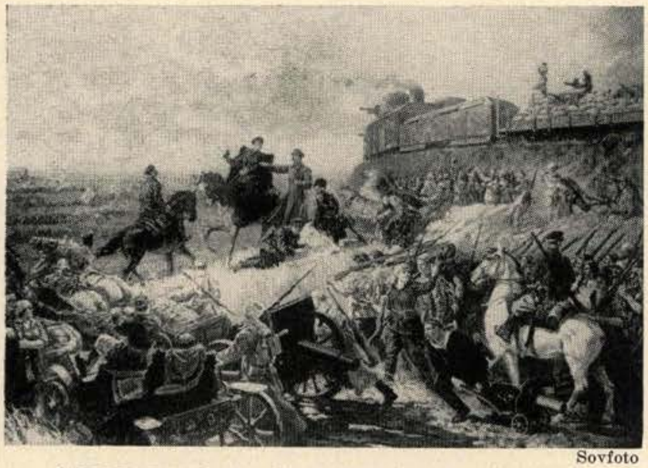
But this period wasn't all spent in production work. At first American manufacturers were reluctant to stick their necks out by undertaking to mass produce a tank designed to suit what the Germans call "unrationalized" Old World methods. Of course, the drawings had to be changed from the metric system to feet and inches—but this was a handicap under which the Russians also worked. When contracts were let, time was taken up in engineering production according to American standards. But though the U.S. automotive industry was still comparatively young, and though special facilities for armor production had first to be created, American industry had done 209 Renaults in the time Russia's industry had done one. Without doubt, had the Armistice not intervened, the next three months would have seen a flood of tanks pouring forth from the U.S. plant combine—to complete in a year and a quarter a total of 4,400 Renaults.

The Russian Renault tank program proved a flash in the pan. Though built by experienced shops, upon the Red Army's own admission the Russian Renaults didn't stand up well. Production was suspended after 15 were built, although the tanks saw Civil War service, and continued to be the principal Soviet service tank until 1929.

The degree of comparative achievement on this early tank—the first one either the Soviets or the Americans produced—startlingly reveals the relative standing of U.S. and Soviet industries at that time. It reveals the immense handicaps under which the Soviet



The Russkii Reno.



Sovfoto

THE DEFENSE OF TSARITSYN (STALINGRAD). From the painting by P. Sokolov-Skalya. Stalin—in long coat—stands in center of scene.

armor program was initiated, and under which it has labored.

More important, it brings into strong relief the matter of quality—the significance of which is too often forgotten in consideration of a weapon's given characteristics, and in the face of impressive figures as to quantity production. The qualitative factor in the performance of the Russian Renaults is highly significant. It was the first twinge of pain presaging the onset of a major headache that has plagued the Soviet tank industry as it has grown and expanded.

The Red Army wasn't sorry to see the Renault flop. This tank (designated, in approved transliteration, *Russkii Reno M 31*) had originated abroad. Its design was not necessarily adapted to Russian terrain conditions, to Red tactical notions, or to Red industrial potentials. Requirements of the Civil Wars called for a tank far more mobile than the 5-mile-an-hour vehicle, however good that tank might have been for piddling along in trench warfare. It is noteworthy that Mr. P's tank, given serious consideration by the old War Ministry, had made all of 15.5 miles an hour. In the highly mobile warfare in which the Reds indulged, where cavalry had again come to the fore, and Budenny's First Mounted Army was the crack force of the Red Army, the Red leaders wanted armor that could roll.

For later armor development, these Civil War experiences were important. They conditioned Red leaders to sweeping envelopments, to hanging flanks, to breakouts from encirclement. The mentality these wars created was far different from the cautious, slugging, pessimistic attitudes developed by Western trench warfare. The Reds became accustomed to taking great risks to win great stakes; they were primed to think of tanks in other terms than that of infantry support, and to accept eagerly the later teaching of Britain's General Fuller.

The Russkii Reno was obviously not the tank to suit such minds. Russian industry did strive to increase the Reno's speed, but brought forth the same waddling mouse. The Russian version was only faster than the French original by a hair—the Russians claiming 5.9 miles an hour against the French 4.9. The American Renaults could do six.

It is therefore understandable that after the Civil Wars, the armored cars continued to outrank the tanks in importance. They had a central administration, a service publication *(The Armored Car)*, and a chief with the rank of Corps Commander (the title "Major General" then being taboo). Tanks were few. They were largely restricted to the 3d Tank Regiment. Efforts were devoted to training, for which purpose the French and British tanks were used.

Interest in tank development naturally continued in the postwar period. For reasons that will presently appear, study of the period gives the impression that Russian engineers were more eager for armor progress than the military. Certainly the new Red regime, then anxious to prove the old wrong in every respect, was a sucker for a "let's show we can do it" approach—a thesis that has been well documented by the studies of White and Basseches. Because of its open attitude, the new regime was able to open the floodgates of engineering and military enterprise. Not being an old, well-established service the Red Army command had no inclination to sneer at the proposals of civilians and subordinates. Anxious to better its low estate, it was on the lookout for ideas that would redound to its advantage. It was in the healthy position of an underdog, "have-not" military service. Not unnaturally, it proceeded to usher in an era of remarkable progress in technical and tactical pioneering—much of it regarded during the 1930's as wild and woolly, but later taken over in whole or in part by the major powers.

It is noteworthy that this progress was attributable not to cold calculation, but to a definite psychological situation—one which affected not just armor, but uniforms, insignia, decorations, small arms, and just about every field of military endeavor. This emotional factor in Soviet military developments is one Americans often miss; they are too inclined to think that all technology and science are carried on under conditions of robot-like ratiocination.

Actual progress and production were hampered by what the Soviets term the "weak technical base of the reconstruction period." In fact, the year 1923 marked a very low ebb for the Red Army. Demobilization and postwar lassitude had hit it hard, the way the U.S. forces were hit right after World War II. The Reds, rather than the Nazis, looked like the likely winners in Germany's domestic political conflict. Because both the Reds and the Germans were angry with the Western Allies (the Germans because of the provisions of the Versailles Treaty, the Soviets for being cast out of the world community), the Reichswehr (the pre-Hitler army) and the Red Army chummed up.

The camaraderie of the orphans of Versailles was not, however, very cozy. At this time the Germans were themselves recommencing to develop tanks—under cover, of course. The Reds conspired to aid them. Thus it was that the original German 18-ton experimental tanks—batches of five each from Krupp, Daimler-Benz (the motor people), and Rheinmetall (old gun people then also developing the 88's) were delivered in 1928, and sent to Russia to be assembled. They went to a tank school and test center deep in Russia—to Kazan on the Volga bend, over 450 miles due East of Moscow.

Two other types of vehicles were sent out to Kazan for test. There was an unsuccessful track-and-wheel job, and five "Little Tractors" from Krupp and Rheinmetall, each of which tanks ran in weight from 8 to 9 tons, and carried a 35mm gun. Magirus, Daimler-Benz, and Bussig-Mag may also have shipped out their 1927 experimental 7- to 8-ton 8-wheeled reconnaissance cars, one or more of which may have been amphibious.

Unfortunately for the Reds, none of these German tries was any more than a practice shot. While the Germans were fooling around at Kazan, they didn't send out there any armored vehicle models which really interested them. Krupp's 1928 LAS-1 (camouflage name for the Pz. Kpfw. I, standing for "Farm Tractor") stayed home. It was the first tank the Germans selected for production when they gave up their idea of bigger, better-gunned tanks, and went in for masses of small machine-gun armed jobs in the early 1930's. The Russians saw nothing of the MAN (the Diesel people) LAS-2—which, with the Pz. Kpfw. I, comprised the majority of German tanks in the Polish and French blitzes. Anyway, the LAS-2 (later Pz. Kpfw. 2) appeared in 1933, when Hitler's political success in Germany had soured the Reds upon the cooperative scheme, resulting in a German withdrawal from Kazan toward the end of the same year.

Because the German firms mentioned had conspired to keep the big German auto producers like Opel and Cologne-Ford out of the German armor picture (their American tie-ups supposedly would have given away Germany's violation of the Versailles no-tank rule), the Reds failed to get from this deal any firsthand knowledge of up-to-date mass production know-how as applied to tank design and manufacture. Since the Germans had had very little World War I experience with tanks anyway, and since one of their best men (Vollmer) was working with Landeswerk in Sweden (from whom the Russians could buy samples if they cared to), the Germans didn't have so much to teach their Russian neighbors.

So far as mutual development exchanges went, the arrangement was plainly a sterile bargain between two very cagey crooks. The chief value for both seems to have been in the school. Here German officers were in the great majority. Having technically been dismissed from their service, they were in theory attending as tourists. The course ran as long as three years, and—interestingly—used only German vehicles.

As was natural, the Soviets displayed interest in armor from all over. In 1926 they bought a copy of the Fiat 3000 B (an Italian edition of the 6-ton Renault), and a Czech KH 50 tank. The latter had both tracks and wheels, one being raised to permit travel on the other. The Russians never took to this or to the similar German vehicle. Between 1927 and 1929 some 40 British Mark I Medium tanks were purchased from that horrible example of "greedy, war-breeding monopoly capitalism"—the great British Vickers-Armstrong firm.

While paying close attention to foreign developments (how close is apparent from their products) Soviet designers continued from 1925 to 1931 to try out their own ideas. In 1927 they came out with the prototype of the MS-1. (The initials do not stand, as usually reported, for "Little Soviet," but for *Mali Sopovozhdeniya,* which means "Little Accompanying.") This 6-ton infantry-accompanying tank (later redesignated the T-18) mounted in its turret a short 37mm gun. The turret machine gun wasn't coaxially mounted, but was set in a facet of the turret armor to the right of the main armament. The T-18 was a 2-man tank like the earlier Renault, and had for the time fair (.63-in.) armor. The desire for mobility made itself felt in the motor, the power train, and the suspension. To cut down the rear silhouette, the motor was a flat opposed-piston model. Transmission and engine were compactly incorporated in a single housing. The speed was 10.5 miles an hour. The Soviets frankly admit that it was based upon the original Renault, having the latter's hull, turret, and tail. These were features which American industry in World War I had not found to lend themselves to easy mass production.

The T-18's mobility and roadability were better than the Renault's, and in 1928 production was started at the Leningrad Factory that had been renamed Bolshevik. Production continued until 1931. Minor changes were introduced in turret design, in suspension, and in armor.* A smoke projector was added, as well as a gas filter. (The Red Army was chemical-defense conscious.)

The T-18 soon got its baptism of fire. It was put to work helping suppress the peasants who had revolted along the Kiev-Voronezh railway. (The peasants, Ukrainians to begin with, had objected to Stalin's program of enforced farm collectivization.) The importance of armor as an internal bolster to the regime had by then been recognized. To secure the loyal support of this arm, in 1924 it had become a requisite that 50% of armored personnel be of proletarian origin—as against 40% for the Air Corps, and 8% for the infantry.

In 1929, when the T-18 began to replace the Russian Renault, it saw further service along the Chinese Eastern Railway. This line ran through Manchuria as a short cut to Vladivostok from Central Siberia; the Manchurian war lord Chang Tso-Lin raided and looted its Russian personnel, and later that year he crossed over into the Soviet Union proper. The Reds proceeded to teach him a lesson.

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*No new designations for later improvements were provided, contrary to previous belief.

Between 1929 and 1931, Soviet engineers tried out eight types of tank, designed for various purposes. The only one produced—and that in limited numbers—was the T-24. This was a larger infantry-accompanying tank than the T-18, really what in that day was classed as a medium. Like the earlier M1921 U.S. experimental medium, the T-24 had two turrets, one atop the other, and a bow machine gun in the hull. The top turret had but one rifle-caliber machine gun, but the main turret sprouted a cannon and several machine guns. The suspension was a prolongation of the T-18's and used the same coil spring and hydraulic buffer system for mounting the bogies.

The other types of tank just didn't work out right.* They vibrated badly, had poor cross-country characteristics, and were hard to drive (a feature still found in the T-24). Plainly, Soviet engineers were up against it. They were disappointed, too, in the work of some German contract engineers. Supposedly automotive specialists (one did the actual work on the special T-18 motor), they do not appear to have turned in a much better performance than their supposedly less-experienced Soviet colleagues.

The chiefs of the reorganized Red Army were not going to stand for this state of affairs. The low condition of Soviet industry might have been tolerated during the 1924-1927 period, when the Red Army was coming out of the post-Civil War doldrums. Then Mihail Frunze (the actual chief) had on the whole adopted a "nichevo" attitude toward the great technical deficiencies of the Red Army, and toward its weak base in Soviet industry. Though as early as 1924 he had publicly recognized the great need for the development of internal combustion engines for military weapons, he thought that the backwardness of Soviet industry made any rapid progress toward equality with the West impossible. He contented himself with trying to overcome the contempt for Western technical progress which the Civil Wars had bred in the minds of too many Red Army officers. They had to learn that they couldn't afford to pitch into an armored regiment with a squadron of horse supported by Tachanka-mounted Maxims.

But when the Defense Commissariat went in 1927 to Klementi Voroshilov—a crony of Stalin's, and a mean technical hand hailing from Lugansk in the industrial Donets Basin—the whole atmosphere changed. Voroshilov postulated an inevitable war against the Soviet Union. In that war, efficiently operating technical equipment of advanced design was to be of signal importance (and how right he was). Tanks he recognized as a fundamental weapon; upon them he placed the greatest emphasis. To supply such matériel, he demanded more than the substantial munitions industry advocated by some Reds. He wanted a broad economic base to provide for emergency conversions, and to make possible the manufacture of the myriad items the need for which could not necessarily be foreseen at any given stage of technical evolution.

Voroshilov had the greatest scorn for the Soviet industrial plant extant before the First Five-Year Plan began in 1928. He used words like "morass," "chaos," and "eyesore" to describe it. He was qualified to criticize: in his early days in "Russia's Pittsburgh" he hadn't been just an accomplished Red agitator; he had proven that he could put his hand to many technical tasks, and do well at them. It was the more understandable, then, that the poor quality of Soviet output disgusted him. The limited amount of military output alarmed him.

His reactions were justified. The automotive industry in Czarist Russia had been almost non-existent. The first auto plant was the Russo-Balt at Riga, founded in 1908. In World War I another small plant was started—the Puzynev Works, but this shop and the Russo-Balt plant together didn't assemble more than a few dozen cars before the outbreak of the Revolution in 1917.

During the war a banker named Ryabushinski bought a license to build Italian Fiats for a round million rubles. In spite of an eight million ruble loan from the War Ministry, he made little progress. When the Revolution came, his plant consisted of a series of disconnected, ill-equipped shops—but they included a forge, foundry, and machine shop. After the Revolution, the Reds moved in tools from elsewhere, and used the plant to overhaul the foreign cars and trucks which constituted the bulk of Czarist automotive equipment. This "bulk" wasn't much. The records show that the Soviets inherited less than 10,000 motor vehicles from the old regime.

The Revolution and Civil Wars did no good to what little Russian industry there had been. The machine shops and other plants that had done conversion work and repair of tanks, armored cars, and trucks were concentrated largely in and around Petrograd (Leningrad) and Moscow, and down in the Ukraine. The tide of war that had swept over the latter area hadn't done the facilities there any good. Much of what was left was worn. Back during the war with the Germans the Russo-Balt site had been lost, and the plant hastily evacuated to Petrograd.

The automotive industry base for Soviet armor development was thus practically nonexistent. Initially, not much was done about the automotive lack, either. In 1923, the Soviets did decide to recommence the manufacture of autos. They reorganized the Moscow shops and renamed them AMO. On the 1924 anniversary of the November Revolution the first trucks made in the Soviet Union (and the first trucks ever made in Russia) rolled off the production line. They were AMO-F-15's—ton-and-a-halfers. In 1926, AMO produced all of 265 vehicles. (France in 1925 built 452,000 cars, 245,000 trucks.) At that, bearings and electrical equipment were imported.

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*Contemporary reports, which persist today, have it that the Soviets in 1926 built an 80-ton tank. These reports were without foundation, for reasons which will be patent below.

Later, but before the First Five-Year Plan, an auto plant was built at Yaroslavl, well to the northeast of Moscow, and the Spartak Factory in Moscow itself was altered for auto production. The combined output of these Soviet plants was insignificant. In 1928, the total output of cars and trucks for all factories was only 835. The number of motor vehicles in the Soviet Union was then around 18,000—almost all of which were imported.

As for tractors, matters were as bad, if not worse. Blinov's caterpillar tractor enthusiasm was to lie dormant till it was resurrected under the Five-Year Plans. Nothing had really been done about tractors until the Revolution. In 1920-21 factories at the Zaporzhe (formerly the Alexandrovski Steel Works, which had supplied the Nikolaev Shipbuilding Yards), and at Kolmna (a locomotive building plant 72 miles southeast of Moscow) tried building some tractors. In 1920, with automotive help from the Moscow auto combine, the Bolshevik Plant in Leningrad turned out a little tracked prime mover. But the tractor division of the Putilov Plant seems to have produced most of the tractors of the Reconstruction Period. With such facilities, in 1924 the Soviets turned out 33 tractors; in 1927, the output was 937.

It wasn't just the depressing aspects of the Soviet automotive industry that bothered the tank-conscious Voroshilov. Even if Soviet Russia were to create a proper armored force, backed by the proper motor vehicles for transport and supply, she would still need a big automotive fuel industry. She would need a road and rail net better than the potholed tracks, and lines of old iron and wood which the Reds then had.

Under the circumstances, it is easy to see why the Soviets concede that though the Russians "invented" the tank, Czarist Russia could not have been its "Fatherland." It is easy to see why Voroshilov had to do something about motors and armor for an army which in 1928 mustered 29 regular and 42 territorial (National Guard type) infantry divisions, and 12½ regular and 4 territorial cavalry divisions. But it seems presumptuous for Voroshilov to have hoped to create a sizable tank force upon such a base, and to have hoped to accomplish his aim in a few years.

Nevertheless, when the First Five-Year Plan was discussed in 1927, Voroshilov pushed hard for his maximal aims. He put his program across. He got his broad industrial base aim approved. His military aim was sound and foresighted: to maintain the numerical strength of the forces, while bringing up the amount and quality of matériel, and gearing training to the level of technical requirements. His eventual goal was quantitative and qualitative quality with Western forces in actual matériel, and in the ability of the troops that manned the new equipment.

Under the First Five-Year Plan the automotive industry got a terrific boost. The AMO plant was greatly enlarged—and renamed for Stalin. The Yaroslavl Plant was rebuilt in larger form. In 1931 the Soviets completed negotiations with Ford for a great new plant at Nizni-Novgorod, 250 miles east of Moscow. The plant was named for Molotov, and the city renamed for the poet Gorki. Originally fitted to make Model A Ford trucks, the Molotov Plant was destined to play an important role in the story of Soviet armor.

The light types of vehicles selected for production in the big new auto plants were not deemed to fit these factories for construction of medium and heavy armored vehicles. Moreover, war demands would be heavy for trucks and staff cars, and the added imposition of a heavy combat vehicle program might be more than the auto industry could stand. Since the Soviets badly needed tractors in their program of agricultural expansion, and since tractors presented design, engineering, and production problems more closely analogous to those for tanks, the Soviet selected their still embryo tractor industry as the one to boom for tank and artillery prive-mover potentials. It was to be the industry on which they were to rely for heavy tracked vehicles in peace and war. They felt that, should complete wartime conversion prove necessary, the country could better do without tractors, than without trucks.

Under the Plan, the Putilov Plant—which had made everything from locomotives to artillery and naval armor plate—lost its tractor facilities, which were expanded and made independent. The tremendous new Dzhershinski Factory at Stalingrad was to go in for tracked vehicles. Between Stalingrad and Moscow, at Kharkov, was to be erected another great plant. Finally, at Chelyabinsk, was to be another great factory. Like the ZIS auto plant in Moscow, it was named after Stalin. This plant in the dark days of World War II was to act as a mother hen to the tank-production facilities of the other big tractor factories, as they fled the German advance. It was to become the greatest tank plant in the world.

For guidance in factory methods to be used in these big new auto and tractor plants, the Soviets looked beyond Europe. The slow, "unrationalized" techniques of the Old World couldn't make possible the achievement of Soviet goals within the prescribed time limits. Only the methods developed by the unlimited ambition of American industrialists were good enough for the unlimited ambitions of Soviet leaders. Thus, though Soviet Russia picked her own and foreign brains for what to produce, it was from Americans that she learned how to produce. The Reds' open acknowl-

(Continued on page 45)

CARDED

Organization of the Armored Infantry Rifle Platoon

1 Off 43 EM Aggregate 44

SCR-510
SCR-536

Platoon Headquarters

Lt 1560 (Plat Ldr)c.
Sgt 1Cl 2745 (Plat Sgt) c.

1st Rifle Squad

Sgt 2745 (Sqd Ldr) r.
Cpl 2745 (Asst Sqd Ldr) r.
Pfc 2745 (Rifleman, Automatic) a.
Cpl 735 (Dvr, Veh, Util, Armd) s.
Pvt 1745 (Am Bearer) r.

Pvt 2745 (Rifleman) f.
Pvt 2745 (Rifleman) r.
Pvt 2745 (Rifleman) r.
Pvt 2745 (Rifleman) r.
Pvt 2745 (Rifleman) r.

SCR-510
SCR-536

2d Rifle Squad

Sgt 2745 (Sqd Ldr) r.
Cpl 2745 (Asst Sqd Ldr) r.
Pfc 2745 (Rifleman, Automatic) a.
Cpl 735 (Dvr, Veh, Util, Armd) s.
Pvt 1745 (Am Bearer) r.

Pvt 2745 (Rifleman) f.
Pvt 2745 (Rifleman) r.
Pvt 2745 (Rifleman) r.
Pvt 2745 (Rifleman) r.
Pvt 2745 (Rifleman) r.

Carrier is M-44 Armored Utility Vehicle.

SCR-510
SCR-536

3d Rifle Squad

Sgt 2745 (Sqd Ldr) r.
Cpl 2745 (Asst Sqd Ldr) r.
Pfc 2745 (Rifleman, Automatic) a.
Cpl 735 (Dvr, Veh, Util, Armd) s.
Pvt 1745 (Am Bearer) r.

Pvt 2745 (Rifleman) f.
Pvt 2745 (Rifleman) r.
Pvt 2745 (Rifleman) r.
Pvt 2745 (Rifleman) r.
Pvt 2745 (Rifleman) r.

SCR-510
SCR-536

Light Machine-Gun Squad

Sgt 2745 (Sqd Ldr) c.
Cpl 2745 (Asst Sqd Ldr) c.
Pfc 2745 (Gnr, Machine) p.
Pfc 2745 (Gnr, Machine) p.
Cpl 735 (Dvr, Veh, Util, Armd) s.
Pvt 1745 (Am Bearer) c.

Pvt 1745 (Am Bearer) c.
Pvt 1745 (Gnr, Machine, Asst) p.
Pvt 1745 (Gnr, Machine, Asst) p.
Pvt 2745 (Rifleman) r.
Pvt 2745 (Rifleman) r.
Pvt 2745 (Rifleman) r.

LEGEND: a—Armed with Rifle, Automatic, Cal .30, Browning M1918A2. c—Armed with Carbine, Cal .30, M2. f—Armed with Rifle, US, Cal .30, M1C (Snipers). p—Armed with pistol, Automatic, Cal .45 M1911A1. r—Armed with Rifle, US, Cal .30, M1. s—Armed with Submachine Gun, Cal .45, M3A1.

DISPELLING THE VACUUM

AT first thought it may seem that because this is a professional publication in the military field its coverage should be reserved for and directed to a straight military view. That would hardly meet our need. The treatment of military subjects as if they existed in a vacuum creates an undesirable condition.

Service personnel are not as broad of outlook in related fields as might be wished. In these times—following on the heels of a war that opened all doors—such subjects as foreign policy, world affairs and international relations, both political and economic, are all of a piece with the military. The individual soldier has a close connection with them, whether he realizes it or not.

We feel a responsibility for promoting further realization through the pages of the JOURNAL. That is why, when discussing his article on Soviet Armor with Author Underhill, we selected the full scope for treatment of the subject rather than to confine the approach to the strictly military angle. To speak of vehicle types built in certain quantities in certain years and of such and such a weight and speed and carrying this or that armament is all very fine: it provides sound basic knowledge. But why not salt those facts with additional material that paints the whole picture and matures that knowledge into wisdom and understanding? The "what" and the "when" look a lot better in company with the "why" and the "how."

General Guderian's article is based upon our request for his views on certain subjects. It is a highly interesting fact that German forces on the Western Front in 1940 employed only some 2800 armored vehicles. But it's even more interesting to note his remarks on the good fortune that may befall those military commanders who are able to exert even slight influence upon the development of the weapons with which they will fight future wars. And his deference to technological progress as indicated by his hesitation to put himself out on a limb in prophesying combat methods of the future is a significant thought.

Foreign policy, world affairs, international relations, politics, economics and the military are perhaps more closely intertwined in our Aid Mission activities than in any other single army activity. Many months of groundwork prefaced our current series on these missions, of which the story on the Advisory Group in Greece constitutes the second. The effort, we feel, is well expended. The tie-in of military-political-economic aspects on both the domestic and international planes is evident enough. We count highly the value of this series.

One of the most fertile areas for the advancement of our policy of promoting understanding of related fields by military personnel has been our Book Section. This process has received increasing attention since midyear, with the emphasis on domestic and international affairs, statesmanship, diplomacy, world politics, government and history: subjects receiving equal attention with essentially military fare. This first issue of the new year contains a book section which we offer with pride, headed as it is by an outstanding notice of one of the best of the new books on a subject of first-hand import—Vera Micheles Dean's review of David J. Dallin's *Soviet Russia and the Far East*. We extend our sincere thanks to Mrs. Dean for her fine contribution to our program to bring awareness of deficiencies. Such distinguished authority is a great assist.

In any design for broadening the background of military personnel, a consideration of foreign languages is implicit. This portion of the scheme was taken in hand in the past spring, with a review of the language field, resulting in the availability through the JOURNAL of leading conversational method courses of language study. In this issue there is added another top educational item in the recording line—the historical record album—"I Can Hear It Now . . ."

As we step off with Volume 58, to round out the sixty-first year since the start of publication of the JOURNAL (three blank years falling at the turn of the century, resulting from personnel demands in the Spanish-American War) we shall continue to offer the items which we feel will further the scheme outlined above. That is the story as we see it. It is, of course, only half of the responsibility. Provision of this service as a means of furthering the Association aim of "disseminating knowledge of the military art and science, and promoting the professional improvement of its members," is about as far as we can go. The rest is up to you. In setting up the program we hope it is doing good and that you will use it to advantage.

NEWS NOTES

Annual Meeting

As this issue goes to press the return cards from Association members indicating attendance or granting representation by proxy at the Annual Meeting on January 17th are about all in. The Secretary of the Association is pleased to note the number planning to attend. This number of the JOURNAL hits the open coincident with the holding of the meeting. The report of proceedings and the list of newly elected officers will appear in the March-April issue.

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WAC Integration Program

In the recent integration of WAC officers into the regular army, three are from the ranks of Armored Center personnel. They are Post Treasurer Captain Mildred C. Burgess, who was integrated as a major, WAC Detachment Commander 1st Lieutenant Dorothy P. Frome, and 1st Lieutenant Mary K. Flannery, who is a psychiatric social worker at the Medical Center. Captain Burgess holds a BA from the U of California and was a statistician prior to her army career; she served one year in the Pacific. Lt. Frome was formerly a commercial artist, and spent two years in the ETO during the war. She has done art historical work. Lt. Flannery holds a BA from Emanuel at Boston and was a social worker and criminal investigator prior to entering the WAC. Also integrated was Major Ruby E. Herman, Staff Director at Headquarters, Sixth Army. If all of those integrated are of the caliber of these officers, the permanent WAC Corps will be a valuable component of our army.

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Reorganization of Constabulary

In a recent reorganization of Constabulary units, the 2d, 6th and 14th Constabulary Regiments were redesignated as follows:

2d Armored Cavalry (US Constab)
6th Armored Cavalry (US Constab)
14th Armored Cavalry (US Constab)

A number of squadrons have been redesignated as Armored Field Artillery, Armored Infantry, Armored Tank and Armored Reconnaissance Battalions.

New 2d Armored Trophy Room

The Second Armored Division has established a trophy room where flags, weapons and other mementoes of the famous "Hell on Wheels" division's accomplishments in World War II may be displayed. This little museum is designed as a place where those who fought with the outfit may review their memories, and where new members may view evidence of the fine accomplishments and tradition of the 2d.

A number of former members have donated trophies for the room, covering various aspects of a rich history. Undoubtedly there are many others who do not know of this project as yet and who possess some items that would augment the collection. General Christiansen has written asking our assistance in locating additional exhibits.

Many former members may have items which they would like to keep, but might send along to the trophy room for temporary display, to be returned to them after a brief period. Still others may wish to make an outright contribution of a souvenir. In either case, the trophies will be put on public display and will be properly safeguarded and well cared for. General Christiansen would appreciate a brief note on the history of any memento sent to the division for this trophy room, explaining its connection with the division.

All items should be securely packaged and addressed to The Commanding General, Second Armored Division, Camp Hood, Texas.

On a recent visit to the French Armored Cavalry School at Saumur, France, Brigadier General Bruce C. Clarke, Assistant Commandant of our Armored School, is shown with General de Langlade, Commandant at Saumur, standing before a French memorial plaque honoring the late General George S. Patton, Jr. In the recent war Generals Clarke and de Langlade commanded Combat Commands respectively in the U. S. 4th and French 2d Armored Divisions.

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Manila Day Celebration

Manila Day will be celebrated in Japan for the fourth time on February 3d, by troops of the 1st Cavalry Division, the unit whose 1st Cavalry Brigade entered the Philippine Capital as darkness fell on February 3, 1945. Since war's end the 1st Cavalry has been on occupation in the Japanese home islands.

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Change of Address

Many of you are not notifying us of your change of address, and as a result we are getting a good number of returned magazines or post office forms indicating nondelivery. Your copy has gone forward in these instances, but has never reached you. Please notify us well ahead of a pending change, along with the date of departure, and you will be sure of receiving every copy of the magazine.

◇ ◇ ◇

First Combat Volume

The third volume in the official history known as The U. S. Army in World War II, and first of the combat volumes, titled *Okinawa: The Last Battle,* is now on sale. Scheduled to run to ninety-nine volumes, this is the Army's documented history of the late war. *Okinawa: The Last Battle,* is illustrated with over 200 photographs, and contains 54 maps and diagrams depicting actions of all units. The price is $6.00. It may be ordered through the Book Department.

SCHOOL DAYS, SCHOOL DAZE!

by LIEUTENANT COLONEL PAUL M. MORRILL

THE impression exists in some quarters that the selection of officers for Service Schools is the result of pitching darts at the *Army Register*, gazing into a crystal ball, or by midnight communion with the ghosts of Gustavus Adolphus, Napoleon and Frederick the Great. Nothing could be farther from the truth. In the Cavalry such selections are the result of many hours of hard work in meticulous searching of records and careful comparison of the past service of those officers eligible for consideration. To paraphrase the gospel of Saint Matthew —Many are "culled," but few are chosen.

To allay the fears of those due for consideration and to dispel the fog of confusion that exists on this subject this article will explain how such selections are made by the Cavalry. Since all Regular Cavalry officers must attend either the Basic and Advanced Courses at The Armored School or have Constructive Credit Equivalents therefor, selection for these courses is largely a matter of timing. Non-Regular officers are at present eligible only for Associate Courses.* I will therefore go through the mechanics of selecting the Cavalry quota for the 1949-1950 Course at The Command and General Staff College. Nominations for higher schools follow the same pattern but are even more selective.

Preparation for selection of the Cavalry officers to attend The Command and General Staff College in September 1949 began in June 1948—some 15 months in advance. At that time a roster was prepared of all Regular Cavalry officers who have graduated from an advanced course or who have Constructive Credit Equivalent for a school of that level. The roster included the names of those Regular officers who are detailed as well as those commissioned in the Cavalry.

This roster was checked, double-checked, triple-checked and checked again. When it became apparent that the name of every officer eligible for consideration was on the roster, the screening was begun. First the names of those officers who would reach the 41st birthday prior to the opening date of the course were stricken off. There is one exception to this. Those officers who were *selected* for previous courses but who were not available because they were overseas may be *considered* for the first course following their return even though they pass their 41st birthday in the meantime. Next the question of availability was gone over. Those officers who were overseas and who were not due to return prior to the opening date were deleted. This rule also has exceptions. Those officers due to return within three months after the 1949-1950 class begins were tentatively left on the roster subject to later approval by the Theater Commander for their early return, if selected. The second exception is those officers who would reach the 41st birthday before their return. The Department of the Army policy mentioned above makes them eligible for consideration for the first class following their return *if they would normally have been selected for an earlier class.* Therefore their names are left on the roster to determine if they would have been *selected* had they been available.

Now the roster is checked again to make sure

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*The entire scope of schools for non-Regular officers will be the subject of a future article.

Greece

(Continued from page 11)

Plan aid. As the military situation eases the economic group will play a more and more important part in the rehabilitation of Greece, so that she may eventually stand on her own feet as a staunch member of the family of democratic nations.

How soon this may be achieved is difficult to say. In spite of the very serious casualties inflicted on the bandits by the GNA, it is unfortunately true that today the communists have rebuilt their strength nearly to what it was a year ago.

There were approximately 30,000 communist-led guerrillas organized into active units in Greece a year ago. Since 1 January 1948, according to official Greek figures, 26,361 guerrillas have been killed or captured. However, despite these losses there are approximately 22,850 communist-led guerrillas in organized units in Greece at the present time. It appears, therefore, that the guerrillas maintain the strength of their units at a fairly high level despite their heavy losses. This maintenance is accounted for by the Greek guerrilla reserves sent from over the northern border and by active recruiting within Greece, which is partly forced and partly made possible by the existence of a dissident minority within the country.

To solve the military portions

Some interesting sidelights on the selection of officers for Service Schools, dispelling some of the fond myths surrounding an important subject.

that no eligible and available officer has been left off or deleted. At this point the records are collected. This in itself is a tremendous task. For the more than two hundred officers still on the roster the following records are assembled: All Efficiency Reports, the Statement of Service (WD AGO Form 66), The Cavalry Branch 201 File, The Adjutant General's 201 File, the Summary of Service (Stroh Board Form), the Officer's Career Summary (Extension to the Stroh Board Form), the Officer's Statement of Preference (D/A AGO Form 483), The Constructive School Credit Equivalent Record, copies of all awards, decorations and commendations and the Academic Reports of schools previously attended.

After the records are assembled, the herculean task of comparison is begun. This phase of the work is done exclusively by the Chief of the Cavalry branch and his commissioned assistants. Nearly all of it is done during periods when the office is normally closed in order that distraction may be reduced to minimum. Over and over the records they go —lowering this one and raising that one until finally the entire list is arranged in order of ability and merit. Now the top 60 are separated from the rest (twice the expected quota of 30). After this the rest of the records are again checked against the lowest man of the 60 initially separated. If any one of these officers has better records than the low man, he is placed in his proper place and the process is again repeated until all are satisfied that we have a list of the top 60 Regular Cavalry officers who are eligible and available, arranged in relative order of demonstrated worth.

It is now the early part of December. At this point a test developed by The Command and General Staff College is administered to each of the 60 officers tentatively selected by this branch. This test is designed to indicate the expected degree of ability to absorb the instruction given at the school. The results of this test are returned to the branch and the initial order of merit is again carefully scanned to see if the results of this test are such as to change the relative listing. The test itself is not conclusive in any way. It is only one of the selection procedures and indicates only the relative aptitude of the individual for this school.

Finally, in January 1949, the last screening will take place and the names of the officers nominated by the Cavalry are transmitted to the Deputy for Combat Arms who coordinates the selections of the four combat arms to insure uniform standards and methods. If disagreements regarding selections develop they are resolved by conference and mutual agreement in each case. Next the nominations for the four combat arms are sent to the Chief of the Career Management Group, Personnel and Administration Division, General Staff, U. S. Army. Here they are coordinated with the selections of the various services. At this point the availability of those officers not ordinarily due for a change of station is requested from the commanders concerned. Final approval is by the Chief of the Career Management Group.

At last the approved lists are returned to the branches and The Adjutant General is requested to issue the necessary orders. Shortly thereafter the top 30—or whatever the Cavalry quota—are the recipients of that most welcome summons—"Will proceed to The Command and General Staff College to pursue the course of instruction. . . ."

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of this problem the Greek Army is now well supplied with arms and ammunition and is undergoing an intensive training program supervised by American officers, emphasizing offensive action by small units for typical guerrilla operations in mountainous regions. Every indication is that the Greek Army should be capable during 1949 of putting forth an effective effort to solve the military portions of its government's war against the guerrillas.

Armored Cavalry Light

(Continued from page 17)

per corps. This does not follow the probable pattern of future war in which wide disperson, with the capability of quick concentration, appears to be necessary. Increased air activity and the use of more effective explosives, probably delivered by guided missiles, will place a premium on light, quick units.

Further, the basis of one regiment per corps did not allow in Europe any rotation; the regiments (then groups) were almost continuously committed. A more practical basis is believed to be one regiment per corps and two regiments per army. This would allow rotation, the performance of airborne defense, and when it becomes feasible, airborne operations. Also these regiments under army control will be highly useful in controlling hostile and disaffected populations within the army area.

ARMORED RESCUE

RECORDED

by LIEUTENANT COLONEL J. C. LAMBERT

"At Hatten and Rittershoffen the 14th Armored Division fought one of the greatest defensive battles of the War."

. . . Jacob L. Devers, General, U.S.A., 6th Army Group

THE historian's perspective of a war visualizes a series of battles designed to annihilate a nation or group of nations. Each battle comprising a war is delicately weighed on the scales of strategical value and assigned relative space in the scheme of the master design. The perspective of a battle and the perspective of a war vary in direct proportion to the echelon of the observer and the power of description of the reporting agency. This axiom invariably extends to the observer who witnesses a small segment of the battle through the periscope of a tank or over the sights of a rifle. Always the battle within the limits of sight and hearing is the most decisive battle since Cannae.

By January 1945, the Ardennes counteroffensive had been contained by the Allied forces. Neither the Allied nor the Axis ledgers have been, nor is it likely that they will be, reconciled as to the political, economic, and strategical implications involved in this campaign. Nevertheless, as the forward impetus of the drive began to slacken, the enemy developed a pattern of well planned, well controlled maneuvers on the front of the 6th Army Group in Alsace. These maneuvers emanated principally from Fortress de Bitche in the Maginot Line; the Wissembourg Gap Sector of the Siegfried Line; the Rhine River line between Strasbourg and Haguenau, and the Colmar Pocket. The developments have been variously described as diversionary demonstrations, newspaper battles, and inconsequential patrol actions. From the perspective of the Supreme Commander this may have been true. In fact, in his report on the Allied Expeditionary Force, he states, "Between Sarreguemines and Neunhofen attacks shaping up into two prongs were made on 1 January in the direction of Rohrbach and toward the Saverne Pass, southeast of Bitche. Six days later the enemy succeeded in pushing troops across the Rhine a few miles north of Strasbourg, and gained ground in a thrust northward from the Colmar Pocket. This latter drive threatened to overrun the Alsatian Plain and isolate Strasbourg. General Devers' forces inflicted heavy losses upon the enemy and with vigorous countermeasures, in spite of difficulties under which they labored, succeeded in stabilizing the line so that no militarily essential ground in the Vosges was lost and Strasbourg itself no more than threatened."

For the manure-, town-ridden troops disposed in the Alsatian Plains and along the rocky reaches of the Vosges, the perspective was considerably more sinister. Unlike the still increasing multitude of high and low level G-2's who now represent that they had complete advance intelligence on the German intentions in the Bulge, the peepsight and periscope intelligence guessers who were occupying the ground just had an itchy uneasiness that they were being surrounded. They foresaw in those German maneuvers not only a significant strategy designed to recoup the politically important Alsatian Plains and cities (the Germans had widely advertised to the natives that they would be back by the New Year) but a bold and studied plan to destroy Allied forces east of the Vosges, and to seize passes through the mountains and cut communication lines into Southern France. Obviously, the first step would be to seal the Saverne and Belfort Gaps, thus trapping the U.S. VI Corps and French First Army. The shallowness of troop disposition would then afford an easy opportunity to reestablish communications with the Colmar Pocket, and at the same time destroy communications to the South, thereby neutralizing the port of Marseille, then an important theater supply head. How, when, and under what conditions the major offensive to accomplish this would be undertaken could not be estimated (Figure 1).

A review of old notes reveals that the captured German periscope and peepsight experts, contrary to the then current opinion, accurately portrayed the strategy of the offensive as involving a closely coordinated air and ground action (and its failure was later attributed to the lack of one over-all commander). The detailed scheme of operations, according to them, provided that mountain-trained SS troops, reinforced with self-propelled artillery, would spearhead a two-pronged attack from Fortress de Bitche south along the crest of the Vosges mountains, seizing Rohrbach to the west of the mountains, and thereby threatening the left flank of the Seventh Army, and the city of Ingwiller to the east of the mountains. Armored and infantry columns, heavily reinforced with self-propelled artillery and air, were to attack northwest from Colmar and seize Selestat and the Selestat-St. Die mountain pass. As the Allied forces were engaging these attacks, a fast armored and infantry column, garrisoned in the Siegfried Line and reinforced by railroad artillery, self-propelled artillery, and jet planes (the introduction of jet planes surprised them, too), would attack southwest from Lauterbourg, fusing with the mountain forces at Ingwiller and extending south to seize the eastern exit to Saverne Pass. A second armored and infantry column was to cross the Rhine between Strasbourg and

Haguenau with the mission of cutting all roads south of the Saverne-Strasbourg Line and forcing the Saverne Gap.

That the knowledge of these prisoners concerning the major strategy was more specific than was the knowledge of most Americans below Corps level is emphasized by document files belonging to Hitler and Von Rundstedt which later came into Allied possession. Hitler, in a speech made to Army, Corps, and Division Commanders on 28 December 1944, stated among other things: "Gentlemen: I have asked you to come here before an action on the successful conclusion of which further blows in the west will depend. . . . Thus, the task allotted to the new offensive does not exceed the capabilities of the forces that are available. We are committing eight divisions on our side. With the exception of a single one, which is coming from Finland, the other seven are, of course, battle-worn; they have been partly refreshed. But the enemy, too, who at the best will face us with five divisions, possibly four, or possibly only with three, is not fresh, is battle-worn, too. One division is an exception; it is located directly at the Rhine. One will have to wait and see how it is going to stand up. There is also the 12th American Armored Division which is not sure yet to be committed. At any rate it is still a new unit which has not been in combat yet. But outside of that, the other units at the side of the enemy are battle-worn, too. We are sure to get into a ratio here which we could not wish to be any better. . . .

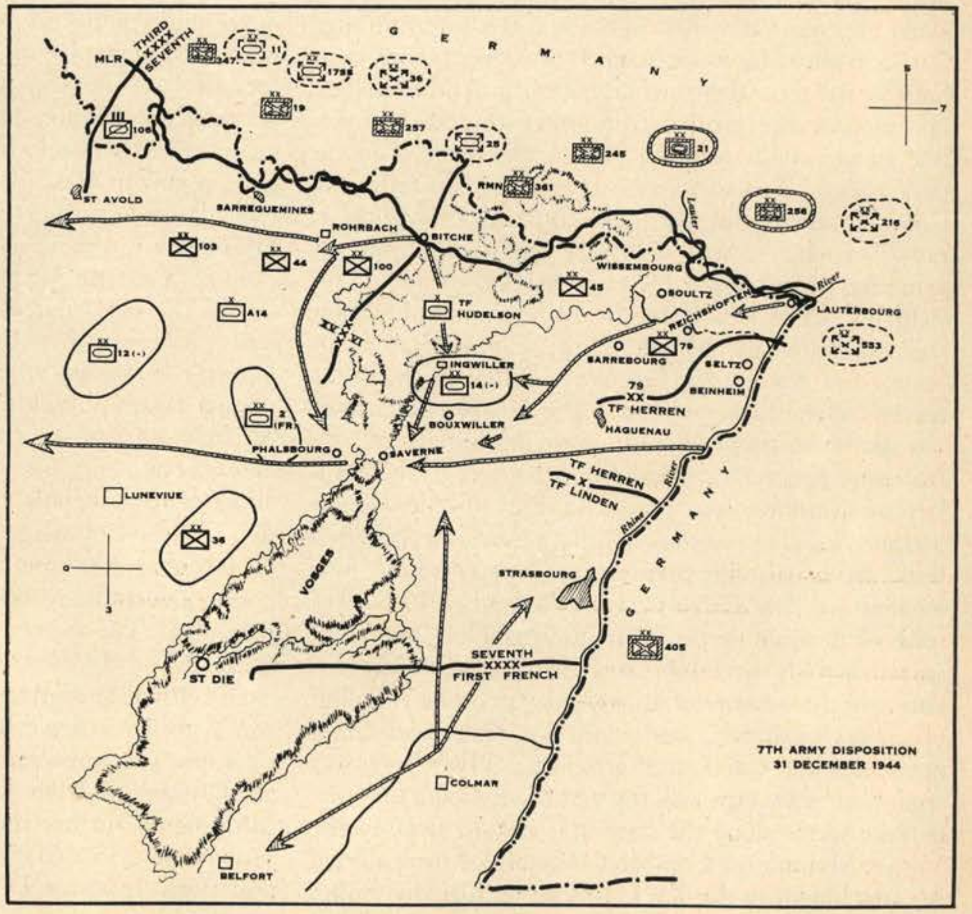
A COMBAT NARRATIVE FEATURE

"This second attack, then, has a very clear objective, namely the destruction of the enemy forces. There is not a matter of prestige involved here. The point is to gain space. It is a matter of destroying and exterminating the enemy forces wherever we find them. The question of liberating all of Alsace at this time is not involved either. That would be very nice; the impression on the German people would be immeasurable, the impression on the world decisive; terrific psychologically; the impression on the French people would be depressing. But that is not important. It is more important, as I said before, to destroy his manpower. . . .

"I approve fully of the measures that have been taken. I hope that we will succeed especially to push the right wing ahead fast, to open the roads to Saverne. Then push at once into the Rhine plains to liquidate the American Divisions. The goal must be the annihilation of these American Divisions. . . . I don't have to explain to you the second time just what depends on it. The success of the first operation, too, is very dependent on this. Because as soon as we finish these

ABOUT THE AUTHOR

Lieutenant Colonel J. C. Lambert entered upon active duty at Fort Benning, Georgia, in 1940. He served with the I Armored Corps at the Desert Training Center, and then with the 8th Armored Division. He next joined the 14th Armored Division, where he served as G-3, from July 1944 through to the inactivation of the division in 1945. There was also a three-month period as combat observer in Italy in 1943. Colonel Lambert is a graduate of the Command and General Staff College, and was integrated into the army in July of 1946.


G E R M A N Y
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LAUTERBOURG
REICHSHOFTEN
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TF HERREN
BEINHEIM
HAGUENAU
2 (FR)
BOUXWILLER
PHALSBOURG
SAVERNE
TF HERREN
X
TF LINDEN
LUNEVIUE
36
VOSGES
Rhine River
G E R M A N Y
STRASBOURG
405
SEVENTH
XXXX
FIRST FRENCH
ST DIE
COLMAR
BELFORT

7TH ARMY DISPOSITION
31 DECEMBER 1944

Figure 1.

two operations, A and B, and if they succeed, the threat to our left flank will vanish automatically. . . ."

Copies of the cover plan of the High Command West (Marshal Von Rundstedt) for the attack operation of Army Group "G" against lower Alsace and the participation of the Army Group Over Rhine referred to by Hitler were also seized. The salient features of this plan provided that the initial attack would be launched on 31 December 1944 with the initial objective of reaching a line ENCHENBERG–SARRENSBERG–WINGEN–WIMMENAU–ROTHBACH–ZINSWILLER–WASENBERG. Subsequent objectives were defined "to cut off the enemy strength in lower Alsace and destroy the enemy west of the Vosges." Eight divisions, a Werfer Brigade, an Artillery Corps and a heavy tank battalion (Royal Tiger) with two flame thrower companies were provided as the striking force. The 25th Panzer Grenadier Division, 7th Parachute Division, and 6th SS Mountain Division were to be held for exploitation. The mission of Army Group Over Rhine was defined as the simultaneous development of a bridgehead over the Rhine, north of Strasbourg, on a wide front. Twenty-four hours after the attack of Army Group "G" astride the Vosges, it was to initiate a series of limited objective attacks, finally establishing communication with the north flank of the Nineteenth Army.

According to early thinking in tank warfare, the ideal was to attack down ridges, by-pass resistance, and avoid unprotected defiles. That is still sound thinking but in reality the modern tank must be prepared to fight in any terrain against any obstacles and to undertake any kind of mission from outposting an infantry line to mountain warfare (150 tanks deep and one tank wide). But to narrate the actual versatility of tanks, although this particular type of utilization is rather expensive, will require a slight digression in summing up a series of facts and events.

By mid-December 1944, the 14th Armored Division had penetrated the Maginot Line, captured Wissembourg, and was engaged in close combat in the outer reaches of the Siegfried Line. Presumably because of the drain on supplies, units and personnel, for the Ardennes operation, replacements were few, and artillery ammunition was rationed. Forward movement was succeeded by a series of futile jousts with Siegfried forts. Eventually the division was ordered to organize its zone for defense and on 24 December 1944, was relieved in place by the 79th Infantry Division. Concurrently with the relief, the Reserve Command, consisting of three troops of armored cavalry, one battalion of armored infantry, one company of armored engineers, and one battalion of armored field artillery, was organized as a Corps task force and assigned a ten-mile defense sector along the crest and eastern slope of the Vosges Mountains; Combat Command A was alerted for attachment to the XV Corps some thirty-five miles distant as a counterattacking force. The remainder of the division was assembled as an armored reserve for the northern Alsatian plains defense, with a secondary mission of patrolling for parachutists.

31 December 1944 was clear and cold. The thin lines of the Seventh Army stretched some 84 miles from the Rhine River through the Vosges Mountains to St. Avold (Figure 1). The VI Corps held the right (east) flank, the defense lines running an irregular course from a point south of Bitche, northeast through the mountains to Neuhoffen, thence northeast along the eastern slopes of the mountains to Lembach, thence along the Seltzbach River and Maginot Line to the Rhine River and south to Bischwiller. The composite task force from the 14th Armored Division occupied the ten-mile sector on the left (west) flank of the VI Corps. The remainder of the line was predominantly garrisoned by miscellaneous type units and by infantry units that had been assigned for the purpose of indoctrination and completion of training. The Sarreguemines–Haguenau main road traversed the area. Owing to the Germanized nature of the previous Alsatian government and the proximity of the civilian population to the front line, it was necessarily presumed that the enemy was well acquainted with the Allied effective strength, supplies, reserves, and detailed disposition.

For three days preceding New Year, Bitche could be observed from observation posts. During the hours of darkness, listening posts reported heavy rail and motor movements. Friendly patrols were unable to penetrate beyond the outpost line. Enemy patrols became larger and more aggressive. Intelligence estimates from higher headquarters finally fixed the enemy effective strength on the front of the task force as being about 600-700 effectives.

Midafternoon of 31 December brought orders prohibiting any type of New Year celebration. A light snow covered the plains and mountains. The intensity of the cold increased along mountain roads and trails. There was no unusual enemy activity. *A few minutes before midnight it came*—small camouflaged groups began to infiltrate without preparatory fires. As they were discovered they organized all around defenses and dug in. After a number of infiltrations along roads and trails had been made, a frontal attack was launched by white caparisoned hordes screaming, "Die you Yankee bastards." Machine gunners actually had to elevate their weapons to fire over the dead and wounded. The spearhead of the attack was identified as the 17th SS Panzer Grenadier Division which had been refitted and given special mountain training. It was reported to have had between 5,000-7,000 effectives and was reinforced by elements of the 21st Panzer Division and 6th SS Mountain Division. Enemy information further indicated that five additional divisions, the 256, 361, 559, Volks Grenadiers, and 19th and 36th Infantry Divisions were included in the attack plan.

The attack developed in a southeasterly direction, the impetus coming diagonally through the right flank of the XVth Corps and over the left flank of the VIth Corps (interrogation of prisoners indicated that they had no difficulty in determining the Corps boundaries because of the different type elements in the line and their known corps assignment). Simultaneously, a similar attack had been mounted in the vicinity of Fortress de Bitche and was directed southwest toward Rohrbach.

By daybreak the enemy had cut the main east-west roads and reinforced the ground troops with self-propelled artillery and tanks (they had improvised cleats on tank and track vehicles on account of ice covered roads). The 14th Armored Division task force command post had been isolated; the portion of the line held by armored reconnaissance elements had been completely overrun; the infantry battalion and attached engineers were engaged in close combat; the armored field artillery battalion was utilizing direct laying methods; the multiple antiaircraft weapons were being used for ground fire.

Although the task force was not under the control of the division, the commanding general dispatched a company of medium tanks without camouflage (no white paint or cloth was available) and a company of armored infantry to relieve the beleaguered troops. At the same time the Corps committed additional Infantry and Engineers. Casualties from enemy fire and weather mounted alarmingly. The remainder of the armored infantry battalion which then had one company engaged was committed during the afternoon. Reinforced by air missions, continued cold, and additional troops, the southerly advance was halted, with the exception of infiltrations in the vicinity of Wingen sur Moder by elements of the 6th SS Mountain Division. The portion of the 14th Armored Division not engaged was assigned the mission of guarding mountain passes to prevent infiltration into the plains; to patrol activities; and was held as a mobile counterattacking force.

On 2 January 1945 the 14th Armored Division command post was at Bouxwiller. Combat Command A was attached to the XVth Corps, separated by some fifty miles of treacherous roads. Two armored infantry battalions were engaged in the Vosges mountains, some 20 miles apart. The armored artillery was reinforcing the fires of the 45th and 79th Infantry Divisions. The remnants of the armored cavalry reconnaissance squadron were patrolling rear areas. Combat Command B, consisting of one reinforced tank battalion, was guarding mountain passes over a fifteen-mile front from Ingwiller to Niederbronn. The ground was covered with snow and ice. On 3 January 1945 Combat Command A was relieved by the French 2d Armored Division and reverted to division control, but before they had closed in an assembly area they were attached to a task force of the 79th Infantry Division and moved northeast to the vicinity of Soultz.

By 6 January 1945, the enemy had cut all east-west roads through the Vosges mountains north of Saverne Gap. Attempts to take exit towns or penetrate south of Wingen had been smothered and the situation fairly stabilized but heavy pressure was being continued. The Panzer and Panzer Grenadier Divisions in the enemy line were replaced by Volks Grenadiers. Considerable north-south rail and motor traffic was being observed east of the Rhine River and there were known supply and personnel build-ups in the Colmar Pocket but action in that sector up to that time had been limited to heavy patrols. It began to explode in the direction of Selestat, Mutzig, and Strasbourg. The First French Army was giving some ground. That left the troops in the Plains (the VI Corps and the First French Army) fighting on three sides with two mountain passes available for supply, evacuation and possible withdrawal.

From 6 January 1945 to 9 January 1945 enemy activity along the line from Wissembourg to Strasbourg increased. The 21st Panzer Division made a probing attack south from Wissembourg; limited objective attacks were made in the vicinity of Hatten and Gambsheim. Parts of Hatten and Rittershoffen were occupied. The 1st Battalion, 242d Infantry, then new and unseasoned, proved weak to the probing 25th Panzer Grenadier Division and was quickly overrun in a surprise tank-infantry attack launched from the Haguenau Forest. The 2d Battalion of the same regiment was committed to restore the MLR on 9 January 1945 but was unable to accomplish its mission. The 2d Battalion, 315th Infantry, was committed to relieve elements of the 242d Infantry but before the relief was effected, both units suffered severe casualties. By use of ferries and pontoon bridges the enemy continued to cross personnel and armor for assembly in the vicinity of Gambsheim. Areas initially cleared by friendly troops were quickly retaken as the enemy reinforced infiltrating troops with armor and self-propelled weapons. Heavy losses in personnel and equipment were suffered by friendly troops as the build-up continued.

During this entire period, Combat Command A, 14th Armored Division, was attached to a Task Force of the 79th Division. Its utilization was in strict accord with necessity as it was the only armor available and the only mobile reserve. Continued piecemeal fights were occurring up and down the entire front. The operational tank strength was parcelled out to the infantry elements by platoons. Not typical of all the actions but an illustration of the enemy tank strength is an incident that occurred on the afternoon of 9 January 1945. The 1st Platoon, Company A, 48th Tank Battalion, commanded by Lieutenant Edgar A. Woodward and consisting of four operational medium tanks, was ordered into position as a counterattacking force. En route, in line, to occupy their position, sixteen

Mark IV tanks crossed the T. Within five minutes six of the enemy tanks had been destroyed and the others fled. During the same afternoon this platoon accounted for two more tanks, one self-propelled gun, one personnel carrier and one command car. Finally, on 11 January 1945, Combat Command A was committed as an entity. By this time the enemy had organized the high ground, fixed antitank guns in Hatten and infiltrated strong panzer and grenadier forces into Rittershoffen. The attack made little progress and suffered heavy tank losses. Elements of the 7th Parachute Division had been identified in Hatten, bringing to three the number of first line combat divisions involved in the assault. The troops in Hatten were surrounded and what had been the right flank was indefinite.

At about noon on 11 January 1945, the 14th Armored Division received an order to attack on 12 January 1945 to restore the Corps' main line of resistance in the vicinity of Hatten. The pattern and intent of the enemy strategy were obvious to the lower echelon strategists—they honestly believed they should be operating on army level. And to review—heavy pressure was being continued in the Vosges Mountains by at least four divisions; the drive from the Colmar Pocket was gaining momentum in the south; the Gambsheim build-up had reached formidable size and was gradually inching out a wider bridgehead; three of the better German assault divisions had been identified in the zone where the division was ordered to attack. Their flank had been fused with the Gambsheim bridgehead and their rear was supported by the Wissembourg garrison and the Siegfried Line. A pontoon bridge had been completed over the Rhine near Seltz and was in use by the enemy. The jet plane (ME-262) was introduced on 10 January 1945, a factor which complicated daylight road movements and presented a real dilemma to the antiaircraft. But among the more serious propositions confronting the Commanding General, 14th Armored Division, were:

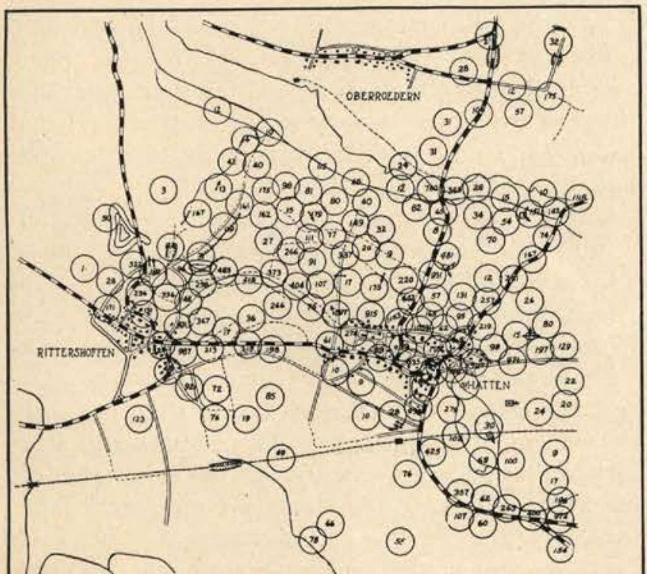

Figure 2.

a. **Troop Effectiveness.** (1) Combat Command A was already in close contact with the enemy and would not revert to division control until assault elements crossed the line of departure. At the same time, the command was so closely intermingled with elements of the 79th Infantry Division that it could not be withdrawn without jeopardizing their safety and effectiveness.

(2) The Reserve Command, recovering from heavy casualties suffered in the Vosges Mountains, was en route to an assembly area for rest and refitting. Its infantry element would not be relieved in its position in the Vosges before 12 January 1945.

(3) Combat Command B, still guarding mountain passes and patrolling mountain roads, was disposed over some fifteen miles with the mountain roads iced over. It was the only command entity that could be assembled for an attack. The 62d Armored Infantry Battalion, the infantry element assigned Combat Command B, had been severely weakened by losses suffered in the initial phases of the Vosges attack.

(4) One battalion of armored artillery was retained by the VI Corps to reinforce the 45th Infantry Division Artillery.

(5) No infantry units were available to reinforce the division during or following the attack.

b. **Supply and Evacuation.** (1) Prescribed loads were aboard vehicles but artillery and mortar ammunition was rationed. Vehicular and tank replacements were available. The ammunition dump east of the Vosges was scheduled to be closed. No changes in ration and gasoline schedules.

(2) Replacements for all losses suffered in the initial attack of the Siegfried Line and in the brunt of the Vosges attack had not been received. Non battle casualties from frozen feet (particularly among tank and other vehicular crews) had been sizable. Replacements could not be expected prior to the attack and it was not known when they would be available subsequent to the attack.

(3) It would be necessary to reinforce existing casualty evacuation facilities to support the attack.

(4) Camouflage material for men and vehicles was available in limited quantities. Improvised cleats and extensions had been added to some track vehicles.

c. **Terrain, Logistics and Attack Plans.** (1) The high ground in the vicinity of Hohwiller dominated all avenues of approach to the north or west from Soultz and was the critical tactical terrain feature in the immediate area. It was held by reserve elements of Combat Command A, then attached to the 79th Infantry Division.

(2) The Main Line of Resistance generally followed the Maginot Line from Birlenbach through Hunspach, Oberroddern, Hatten, Forstfeld, and southwest to the Rhine River. The sector between Hatten and Forstfeld ran through the Haguenau Forest in very flat, heavily wooded country. Observation was not possible in the forest area.

(3) Road nets converged in Soultz. The towns of Hatten and Rittershoffen lay on the south slope of a ridge between the north edge of the Haguenau Forest and the Seltzbach River. The Haguenau Forest proper extended north to the Seltzbach River and approximately 2,000 yards east of Hatten. The bare, open slope on the north of Hatten and south of Seltzbach River afforded no concealment from hostile observation in Stundwiller and Buhl. A stream flowed east of Rittershoffen through Hatten and east into the Haguenau Forest forming a valley defiladed from observation north and west of Rittershoffen. (The valley route was being used by the enemy for moving troops and supplies to and from Rittershoffen.)

(4) Maginot Line forts east, north, and northeast of Hatten were occupied by the enemy. These forts were designed to be invulnerable to artillery fire, containing reinforced concrete and earth protection for numerous galleries. Smaller forts south of Hatten were organized for machine-gun and antitank-gun emplacements.

(5) Three first-line enemy combat divisions had been identified in the zone of attack. The enemy had invested the north, east, and south sections of Rittershoffen and all but the extreme western tip of Hatten in which elements of the 79th Infantry Division and 42d Infantry Division were isolated. The actual condition of that portion of the line through the Haguenau Forest was not known; however, it was reported that enemy patrols were moving with considerable freedom.

(6) The objective of an armored attack would necessarily include initial isolation of both Rittershoffen and Hatten. This involved cutting the Hatten–Buhl and the Hatten–Seltz road. Avenues of attack were restricted to the ridge line (approximately 2000 yards frontage) between Rittershoffen and the Seltzbach River or to the low area (approximately 600 yards frontage) between Rittershoffen and the Haguenau Forest.

(7) The first avenue was under complete observation of the enemy from Buhl and the high ground north of Buhl but offered a reasonably concealed approach march and forward assembly area. The left flank would be partially protected by friendly outposts in Oberroddern. The right flank was exposed to enemy tank and antitank fire from the north and eastern portions of Rittershoffen. Marching distance of Combat Command B to the line of departure would be approximately sixteen miles for the nearest element. Success would depend upon speed and surprise.

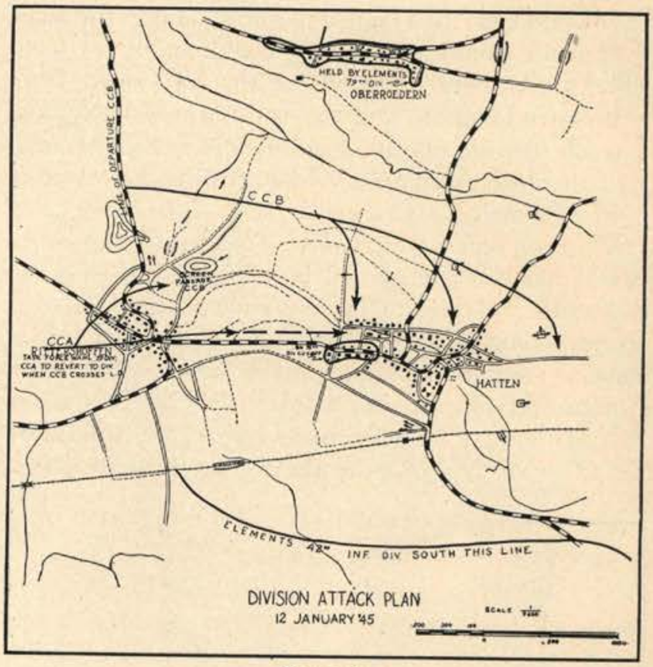
HELD BY ELEMENTS 79TH DIV
OBERROEDERN
LINE OF DEPARTURE CCB
CCB
CCB
CCA
RITTERSHOFFEN
CCA TO REVERT TO DIV WHEN CCB CROSSES L.D.
HATTEN
ELEMENTS 42ND INF DIV SOUTH THIS LINE
DIVISION ATTACK PLAN
12 JANUARY '45
SCALE

Figure 3.

(8) The second avenue offered some concealment during initial phases of the attack but approximately two miles of the approach march would be in the face of the enemy. The left flank would be exposed to enemy tank and antitank fire from the south section of Rittershoffen and the Maginot forts in the flats between Hatten and Rittershoffen. There was no assurance of the security of the right flank until contact could be actually established with troops in the Haguenau Forest. Maneuver room would be restricted by a railroad embankment, drainage ditches, and the forest. Marching distance of Combat Command B to the line of departure would be approximately twenty-one miles for the nearest elements. Success would depend upon shock.

(9) Skies were overcast. A light snow covered the ground. Roads were iced over. Weather was subfreezing. Low fogs prevented effective air observation although the enemy's surveyed fields of fire were clear and unhampered.

(10) There were two road nets over which the division could move. The first and shortest was a ledge road along the base of the mountains. The other was much longer and was over the Main Supply Route which was then carrying its maximum load. Both roads converged in the vicinity of Soultz.

d. **Command and Fire Control.** (1) Command of elements of the 79th Infantry Division engaged in Rittershoffen and command of troops isolated in Hatten presented a question of mutual agreement between division commanders involved.

(2) The attack was to be launched through friendly troops then engaged in a defensive action, consequently, small-arms fire plans for outposts in

Oberroddern, the Haguenau Forest, and in the zone of attack would require close coordination.

(3) Artillery fire plans of the VI Corps, 79th Infantry Division, and the 14th Armored Division would require minute coordination. (Displacement of the 14th Armored Division Artillery involved a 15-mile march.) (Figure 2.)

Warning orders were issued. Combat Command B would attack at daylight 12 January 1945, the line of departure and axis to be announced after personal reconnaissance. Reserve Command would march to a forward assembly area, prepared to reinforce Combat Command B or to attack on order. Combat Command A would make a limited objective attack in Rittershoffen to screen the passage of the assault element and establish contact with troops in the Haguenau Forest on the right flank. Division artillery commander would arrange all artillery fires in conjunction with the 79th Infantry Division and the VI Corps. The armored cavalry reconnaissance squadron would screen the left flank of the division between Soultz and Wissembourg (elements of 21st Panzer Division had been identified in Wissembourg). Supply and medical installations would displace to advance locations to support the attack.

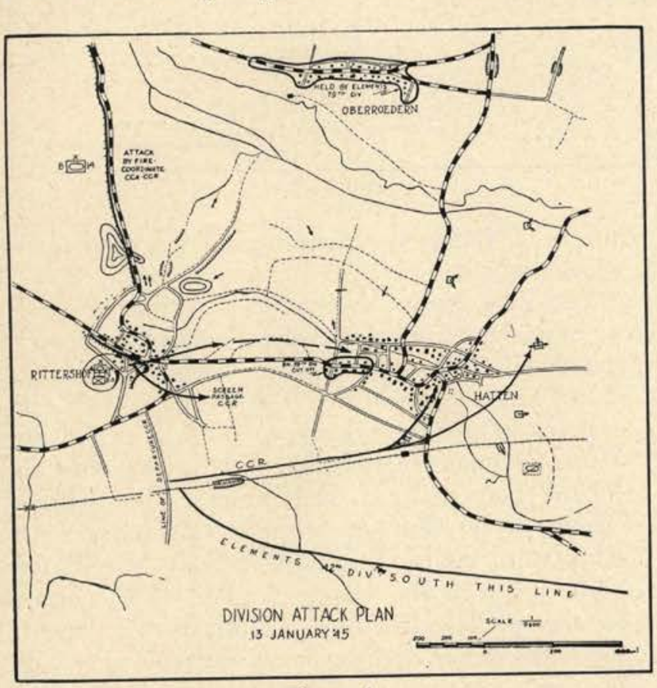

Figure 4.

A forward division command post was opened at Surbourg, approximately three miles from the line of contact, and personal reconnaissance made of the area. A conference was held with the Commanding General, 79th Division, whereby elements of that division in contact in the zone were attached to the 14th Armored Division for operations. It was there determined that the most likely avenue of attack was down the ridge between Rittershoffen and the Seltzbach River since the movement of tanks would be less impeded by obstacles, and there would be more maneuver room and screening fires would be more effective. A line of departure was selected and Combat Command B notified (Figure 3).

As the Rhine fogs embraced the northern Alsatian plains, the 14th Armored Division commenced to displace forward. Recovery vehicles interspersed the columns to recover victims of the icy roads. The temperature was subfreezing. By daybreak the lead elements had begun to assemble behind the line of departure. Infantry half tracks and assault guns were digging in to support the assault. The artillery commenced firing preparatory fires and smoke on prearranged targets. The attack of Combat Command A in Rittershoffen opened with a fanfare of small-arms fire quickly reaching a crescendo as tank cannon, bazooka, assault guns and grenades joined. And then came Combat Command B, first the infantry element, dismounted and dispersed, moving low and at the double, followed by a wave of tanks in wedge formation. The olive drab was decidedly conspicuous in contrast to the snow. After an advance of approximately seven hundred yards, the infantry began to receive heavy automatic fire from camouflaged gun positions sited on the reverse slope of the ridge. As they were pinned down, the tanks drove through. Tank after tank was caught in the cross fire from the Maginot forts and from dug-in, camouflaged tanks and self-propelled guns. (The camouflage was, in fact, so well done that observers could only locate them through muzzle flash or the smoke blackened muzzle when the tubes were elevated or traversed.) The attack continued, cutting the Hatten-Buhl road and moving on to the east of Hatten, but was unable to encircle the town. A counterattack had already been mounted by the enemy in the northern edge of the Haguenau Forest to pinch out Rittershoffen but instead it was launched against the spearhead of Combat Command B. The pressure of the counterattack, supported by intense artillery, nebelwerfers and self-propelled guns, was so great that Combat Command B withdrew and organized the terrain between Rittershoffen and the Seltzbach River. Additional assaults were equally futile. Combat Command B had suffered sizable casualties in personnel and equipment.

By 1600 of the 12th of January it was obvious that Combat Command B would be unable to take and hold its objective. Combat Command A had not established satisfactory contact with troops on the right and had made negligible progress in the bitter house-to-house fighting in Rittershoffen. It was necessary to shoot medical supplies into the troops in Hatten by heavy artillery. The Reserve Command was closing in its forward assembly area with exception of the infantry which would not close until about 2000. The Reserve Commander was ordered to continue his march past the forward assembly area to the vicinity of Neiderbetschdorf, and to attack at daylight on 13

January along the avenue between Rittershoffen and the Haguenau Forest (Figure 4). The armored cavalry reconnaissance squadron, less one troop, was moved to the right flank to patrol the Haguenau Forest and maintain contact with friendly elements occupying that sector. Combat Command B was ordered to demonstrate on the left flank; to establish a base of fire, and to be alert for an armored attack from the direction of Wissembourg. Combat Command A would renew its attack to clear Rittershoffen.

It snowed that night. The infantry battalion had marched all the previous day and during the greater part of the night but at dawn the attack began. The enemy reaction was identical with the preceding day with flank fires being received from the southern tip of Rittershoffen, the forward slope of the ridge between Seltzbach River, Haguenau Forest, and from the direction of Seltz. Thrice the infantry was forced back, reorganized, and advanced. The tanks carried the fight and although receiving antitank fire from three sides and taking heavy losses, managed to cut the Hatten–Seltz road. Similar to the preceding day, sheer superiority of fires forced them to withdraw. The next alternative was to reinforce and relieve the troops in the western end of Hatten. To do this, infantrymen mounted the decks of tanks for the thousand-yard dash. By dusk the remnants of the entire infantry battalion were in Hatten with sufficient tanks to support them. Casualties were evacuated and supplies brought in by tanks and half tracks convoyed by tanks, since wheeled ambulances and cargo vehicles were being fired upon indiscriminately. The enemy had reinforced his garrison in Rittershoffen and again the progress of Combat Command A was registered by the number of houses cleared, and not streets. The 47th Volks Grenadier Division was identified in Hatten making a total of four divisions. Enemy heavy artillery was being brought into action all along the line.

TABLE 1—ARDENNES COUNTEROFFENSIVE

		DEAD	WOUNDED	MISSING	TOTAL
I.					
American Casualties 16 Dec 1944–25 Jan 1945		8,607	47,139	21,144	76,890 a
II.					
First and Third Armies, Ardennes, 16–31 Dec 1944		2,923	14,468	15,516	32,907 b
(Total Inf Div	19 c				
(Total Armd Div	10 c				
(Total Abn Div	3 c				
(Total Armd Gps	7 c				
(Total Cav Gps	6 c				
(Total TD Gps	5 c				
III.					
Seventh Army, Alsace, 1–31 Jan 1945		1,836	8,263	4,816	15,275 d
(Total Inf Div	8 e				
(Total Armd Div	2 f				
(Total Abn Div	1 g				
(Total Armd Gps					
(Total Cav Gps					
(Total TD Gps					

a From unofficial histories. Includes nonbattle casualties.
b From First and Third Army Histories.
c General Order 114, War Department, 1945.
d From Seventh Army History. Does not include nonbattle casualties, Air Force or French casualties.
e Does not include infantry elements of 42d, 63d, and 70th Infantry Divisions attached without supporting arms for indoctrination and completion of training. Does include combat elements earmarked for SHAEF Reserve.
f Includes combat elements earmarked for SHAEF Reserve.
g 101st Airborne Division which joined about 25 Jan 1945 for refitting.

Two counterattacks were repelled in Hatten on the night of 13 January. One counterattack was repelled in Rittershoffen. At daylight on 14 January coordinated attacks were launched by CCA in Rittershoffen and the Reserve Command (reinforced by elements of the 79th Division that had been isolated) in Hatten. The attack of CCA was contained as the enemy converted the stone church and stone-walled cemetery in the center of the town into a strong point. The attack of CCR made rapid progress and by 1100 had cleared two-thirds of Hatten in house-to-house fighting and by mouseholing from house to house. Then came the counterattack. Preceded by intense artillery of all gauges and supported by heavy tanks and flame throwers, the enemy converged on the Reserve Command from the direction of Buhl and from the direction of Seltz. One-half the gain was lost. The Reserve Command reorganized and launched another attack in the afternoon but after initial gains was counterattacked and forced to withdraw. During the night of 14 January 1945, there were three counterattacks by fresh enemy troops, all of which were repelled by heavy, close artillery support.

And so for the next five days there were attacks and counterattacks. What had been intended as a skirmish to restore the MLR had turned into a major defensive battle. The toll of friendly troops mounted and mounted. The houses in the towns, the churches, the public buildings, gradually began to disintegrate under the constant artillery, phosphorus, air, and flame throwing attacks. Blocks of buildings were destroyed to establish fields of fire. One hundred fifty-five self-propelled rifles were utilized to penetrate walls of strong points and phosphorus fired through the holes. The enemy continued to commit fresh troops while the strength of the friendly troops dwindled after each attack. The friendly garrison in Hatten was reinforced by a troop of armored cavalry and Rittershoffen was reinforced by armored engineers. On 16 January 1945 an additional infantry battalion from the 79th Division, fresh from combat in the Vosges Mountains, was committed, supported by tanks, to take the northern section of Rittershoffen. One man of the assault company returned. Nine more tanks were lost. Sorties by jet planes were becoming more and more frequent. Friendly air missions were flown on the enemy-held section of Hatten, on Buhl, and Stundwiller. The aid station in Hatten with medical personnel and patients was destroyed by enemy mortars. Medical aid men removed all conspicuous markings as they were being fired on indiscriminately. Evacuation and resupply continued to be effected by tank and half track. An attempt to supply Hatten by air drop was unsuccessful.

TABLE 2

	14th Armored Division Rittershoffen–Hatten *13–20 Jan. 1945*	101st Airborne Div	4th Armored Div
		Bastogne *10 December 1944–10 January 1945*	
		(a)	(a)
Killed	104	185	263
Wounded	899	966	909
Missing	112	505	53
Vehicles destroyed in action:			
Tanks	39		61
Half tracks	5		21
Wheeled	30		
Armored Cars	1		
105 Howitzers	2		
57MM	6		
		138 (all type vehicles)	41 (misc. vehicles)
Ammunition expended by and in support of (rounds):		(b)	(b)
Carbine	64,670	2,726,328	75,513 (rounds of large cal.)
Cal. 30	682,787	1,970,384	1,881,473 (rounds of small-arm cal.)
Cal. 45	36,460	143,695	
Cal. 50	43,337	111,010	
37MM	1,825	387	
57MM	1,800	105	
75MM	6,723	63,409	
76MM	3,392		
60MM	3,977	21,364	
81MM	2,584	27,147	
Lt Artillery	33,747		
Med Artillery	4,776		
Hvy Artillery	730		
Rockets	1,496	5,575	
Grenades	3,542	12,719	
AT Mines	7,500	950 (mines)	
Bombs	120		
Gasoline Expended (gallons)	193,300		

(a) Information from Historical Division, Department of the Army.
(b) Represents total ammunition issued to credit of unit and supporting units and includes ammunition destroyed and lost as the result of enemy action.

On 19 January 1945 the division was alerted to break contact and withdraw to previously prepared defenses behind the Moder River on 48 hours' notice. At 1300 on 20 January 1945, orders were received to break contact and withdraw during the night. One Combat Command was to fight the rear-guard action and cover the withdrawal of the 14th Armored and 79th Infantry Division and attachments. Roads were to be mined and cratered, and bridges blown during the withdrawal. Vehicles not recovered were to be destroyed. It commenced to snow again at 1500.

To discuss all the tactical factors involved in breaking contact with an aggressive enemy and withdrawing some twenty miles would require several hours. When you add to such a situation heavy snow, two infantry divisions plus attachments, one armored division plus attachments, corps engineers, corps artillery (including heavy artillery attachments), and three available roads, the problem becomes aggravated. It was a busy night. The Hatten garrison was evacuated by half tracks.

To report that the withdrawal was without some confusion and rancor would be a misstatement. There were some three to four thousand vehicles including field pieces, tanks, half track vehicles and wheeled vehicles. This plus dismounted troops and refugees severely congested the available road net. The icy condition of roads, continued snowfall, and lack of time for preparations aggravated the situation (a battalion of 8-inch howitzers was digging in its trails in the vicinity of Hoelschloch at 1600 and received withdrawal orders at 1700). On the other hand it must be conceded that under the conditions the VI Corps did a magnificent job in controlling and coordinating. Owing to weather conditions and rear guard action it was two days before the enemy reacted.

The shorter line occupied by the Army freed additional troops for the Colmar Pocket and for the Gambsheim bridgehead. Pressure in the Vosges weakened; however, the enemy continued to make probing thrusts into the Moder River defenses until early February.

In the final analysis, when battle is joined the outcome is determined not by fire capabilities but by fire delivery—the amount of controlled fire delivered at a critical place at a critical time. Viciousness of battle is measured by the riflemen killed and wounded and not by the numbers missing in action. At the height of the Ardennes offensive, Allied troops were faced with superiority in numbers and fire. It was a hard, bitterly contested battle. In Alsace there was an equally aggressive and determined enemy. In addition to having superiority in numbers and fire, he had the advantage of terrain and observation, short supply lines and a plentiful supply of ammunition. There, also, was a hard, bitterly contested battle.

Applying the comparative measuring rod of battle intensity to the two phases of the Bulge Counter Operations it is interesting to note that from the number of troops involved, the weather, and the terrain, the Alsatian phase equalled if not surpassed the Ardennes phase. Table 1.

As a part of the Alsatian phase of the Ardennes Operations, the 14th Armored Division, undermanned and outgunned, undertook to relieve the remnants of two beleaguered infantry battalions and restore a four-thousand-yard portion of the Corps MLR. Instead of encountering localized elements of a demonstration force, it ran head on into a major counteroffensive. The cost report for an eight-day period of operations is a fair representation of one phase of the fighting. Considering that the division was being utilized against fortified positions and in restricted terrain, Table 2 illustrates the bitterness of the actions.

According to the myopic views of the historians, the action in Alsace may have been diversionary in nature. If that is true, the expenditure of men, ammunition and equipment to effect the demonstration and the expenditures required to halt it attest that it was the most colóssal one ever mounted in the history of war. Certainly the breadth of the front, lack of communications, and conspicuous absence of poetical reportorial agents prevented the development of an epic or saga. Nevertheless, although their perspective may have been blurred by frost on the periscope and snow on the peepsight, the men in the tanks, the men on the ground and the men with the enemy all around them like to think that when they attacked against odds and held against odds, the intent of the enemy was more significant.

The Story of Soviet Armor

(Continued from page 30)

edgment of their debt to Americans in this sphere, and their feeling that since then both the U.S. and the USSR have left Europe in the ruck as regards production methods, should be an encouragement to Americans. It should especially encourage those who think that recent acquisitions of German talent will give Soviet industry a terrific shot in the arm.

During the 1928-1932 First Five-Year Plan period, schools and courses for tank commanders and drivers were organized. In 1930 the main military staff college created a special department of mechanization and motorization, which cooperated with Moscow's Automotive and Tractor Institute (NATI). Tactical studies were advanced through the creation of experimental tank and armored car units.

Meanwhile, Soviet engineers strove to get the bugs out of what later proved to be many sound tank ideas. But Russian engineering and technical staffs just didn't have the background of European know-how. It certainly had none of the experience passed on to America by the waves of emigration of skilled artisans and engineers from Central Europe. True, through the centuries Europeans had gone to Russia to work, but there had been no mass migrations.

It wasn't that the brains of Soviet engineers weren't fertile, and the technicians capable of skilled work. Their big problem was how to transfer concepts from paper to metal without incorporating bugs that would take ages of trial-and-error testing to remove. It would seem that for such accomplishments, experience is the best teacher. Certainly Soviet industry—however long on ideas—was very short on that priceless item. It was especially short of it in the automotive and tractor fields.

Meanwhile Klementi Voroshilov was figuratively tapping his foot in the Kremlin. He might not have been fully aware of the value of experience, but anyway he was fully cognizant of the military sensitivity of the Soviet Union in its "T" (for tank) zone. Therefore, at the turn of the decade, Soviet tank engineers were told to stop trying to materialize their dreams. They were instructed to build what dream castles they could upon foreign chassis that would roll reliably. They were to pick modern motors and suspensions developed and proved by foreign engineers and machinists whose background and experience enabled them to take out prototype bugs without endless experimentation.

With that directive there begins a new era in the development of Soviet armor. It is the "Middle Ages" of the 1930's. For Soviet armor it was an era founded upon an industrial base created by the First Five-Year Plan, and producing (with important Soviet modifications and to Soviet tactical concepts) tried and true automotive engineering designs of England and America. It was a period when Soviet pride, suppressed in its mechanical expression because of urgent defense requirements, stung under the stigma of failure. As they nursed their injured feelings, Soviet engineers schemed for the day when they should try a comeback —one they could make hold.

LETTERS to the Editor . . . .

AN EXAMPLE IN ALL-AROUND COOPERATION

A call for help.

[*In early November we received the following letter at the Editorial Office:*]

This probably will be one of the most unusual requests of your military career.

The 184th Tank Battalion (organic, 38th Division, Indiana National Guard) is in the process of being organized in South Central Indiana, with Headquarters and Headquarters-Service Company in Bedford. The three tank companies will be located in cities within a 50-55-mile radius from Bedford.

So far, so good. We here in Bedford are glad to have the unit and we're going to do everything we can to make it a superior one. We have the city's top-notch World War II noncoms lined up for the cadre.

But there are no qualified NG or Reserve officers in the area to assume command. It seems all of our World War II field grade officers were CWS, FA, QM, Ord or Air Corps. All of our good Infantry field graders joined the RA.

We have a Reserve FA major lined up as temporary Bn CO, and he will revert to Exec or S-3 at the time a qualified armored man takes over.

We're doing everything we can to find a man for the job.

One of the city's leading industries—the Allison-Bedford Aluminum Foundry (General Motors)—has even promised to give a job, commensurate with his abilities, to the right man. No industry could show finer cooperation.

But we haven't found the man yet.

Do you know of one who might be interested? A former tanker or cavalryman? A former Bn CO, Exec or S-3?

The appeal is made to you because of your wide knowledge of the armored field. If you could give us a lead on a good prospect who might be interested in a change of scenery, we would be forever grateful. If you know of a man who you think would fill the bill, ask him to write me posthaste, please.

We would appreciate any tips you could give us.

DON McLEOD, Secretary,
Bedford Armory Board.

Bedford, Indiana.

[*We immediately set to work contacting likely sources of aid to assist in the solving of the 184th's problem. The first sources that came to mind were the Cavalry Branch of P&A, the Secretary of the Armored School, the National Guard Bureau, and publication in the* JOURNAL. *We spread the word around.*]

A follow-up.

The Allison-Bedford Foundry reports a crying need for research engineers, principally with metallurgical training.

The personnel director told me today that they would grab them up at the drop of a hat. They would be pleased to find a former tank battalion CO who has engineering qualifications.

Pay would probably be anywhere from $300 to $500 per month, depending on experience, etc.

I have received one letter in response to the plea to you—from a reserve major in Baltimore—but his civilian job, personnel counsellor, is not among those needed.

Thanking you again for your assistance and interest.

DON McLEOD.

[*To date the position seems to remain open. Interested and qualified parties should write direct to Mr. McLeod.*]

AIRBORNE AND ARMOR

Posing a question.

I read with a great deal of interest the article in the September-October Armored Cavalry Journal entitled "Armor Expands the Airhead" by Major General Byers. It has answered a question which has long been in my mind; that is the place for the "paratroop tanker." Since the answering of one question often brings to mind another, I am writing this letter.

Upon graduating from USMA in 1946 I attended the Basic Officers Course at Fort Knox and became a staunch and enthusiastic "tanker." On completing that course I attended the Basic Airborne Course at Fort Benning. Ever since then I have debated the union of the two. General Byers has supplied the answer. The idea of the commander, staff officer, or liaison officer of the attached tank unit jumping with the division to keep abreast of the fluid situation until contact is made between the armor and infantry is indeed most desirable. A valuable amount of time may be saved in the marrying of the two units.

The question I would like to ask General Byers is what unit is at present working with the 82d Airborne Division. Also what sort of training does the unit undergo with the infantry and in general how is the integration of the two on the ground contemplated?

I will appreciate an answer to my queries as we have had a great deal of discussion on the subject in my outfit. Also upon the completion of my present overseas tour I hope for an assignment in such an armored unit.

In closing I want to congratulate the editorial staff on the big improvement in the Journal. I have subscribed for three years and the latest issue was by far the best yet.

1ST LT. GUY K. TROY,
Troop A,
2d Constabulary Squadron.

APO 305

General Byers' answer.

Dear Lieutenant Troy:

The editors of the Armored Cavalry Journal have referred your letter of 10 November 1948, to me with their request that I answer it.

At present, the 758th Heavy Tank Battalion is attached to the 82d Airborne Division. The battalion is stationed here with us at Fort Bragg and works with us in field exercises and in joint training generally. The attachment of two tank battalions to the airborne division is expected to be normal when the airborne division operates as a ground infantry division.

During the past several months, a considerable amount of infantry-tank training has been undertaken. In May, 1948, at Operation "Assembly" at Camp Campbell, Kentucky, the 82d Airborne Division engaged in an extensive joint maneuver in the course of which the 756th and 758th Tank Battalions were attached to and operated as parts of the Division. During one of the phases of the exercise, a considerable amount of infantry-tank training at infantry battalion-tank company level was included. Also, schools were conducted during off-duty hours to familiarize the airborne infantrymen with the problems involved in small-unit tank-infantry operations. Since our return to Fort Bragg following these exercises, an extensive tank familiarization course was conducted to familiarize airborne division personnel with the capabilities and limitations of the M-26 tank. All infantrymen and artillerymen of the Division went through this tank familiarization course. The course was divided into four parts: (1) familiarization study on OVM, designed principally to impress the airborne infantrymen with the maintenance and equipment handling problems with which the tanker is confronted; (2) a "going capability" run in which infantrymen rode in or on the tank over difficult ground and observed the characteristics of the tank in operation, its turning capabilities and general ability to take slopes, obstructions, and other difficult terrain features affecting going; (3) a communications demonstration in which all airborne infantrymen operated the tank telephone, and the interphone from within the tank, and received a general lecture on and demonstration of tank communications equipment in general; (4) a demonstration and practical work with tank vision aids including periscopes and fire control equipment, to demonstrate the capabilities and limitations of the tank crew in observation at a standstill and while the tank was running, the gunner's ability to pick up and define targets, and the visibility difficulties encountered when the tank is moving "buttoned up." Currently, during the winter season, instruction in small-unit infantry-tank tactics is being conducted in the unit schools for both officers and enlisted personnel. This instruction is being handled by the officers of the 758th Heavy Tank Battalion. Later in the training cycle, infantry-tank exercises, successively at platoon, company, battalion, regiment and division level, will be conducted to round out the training.

In general, the infantry-tank training conducted by the 82d Airborne Division and the 758th Heavy Tank Battalion is thus far in every respect similar to that which would be undertaken by any infantry division and its organic tank

. . . . with some helpful replies

battalion. In order that an airborne division may have a real capability of fighting as an infantry division, training of this nature is essential.

Your third question requires either a considerable amount of generality or a discussion of many possibilities. In general, the integration of the tank unit with the airborne infantry unit on the ground is no different than the integration of the tank unit with any other infantry unit. The problem is in nearly all respects similar to that arising in the reinforcement of a beachhead by a tank unit arriving on a late lift. It is important that the part that is to be played by the tank unit in the expansion of either an airhead or a beachhead be considered in the early planning of the operation. At the same time, the plan for employment of armor must not become so fixed that flexibility is lost. In order to promote this flexibility, command and reconnaissance personnel should be on the ground and in contact with the next higher headquarters well in advance of the arrival of the armored unit to be committed. To use a hypothetical airhead situation as an example: instead of an advance supported by tanks to seize a more advantageous airhead line as planned, a counterattack by enemy tanks in force is threatened. If the tank battalion commander, some of his staff, and a portion of his reconnaissance platoon are available in the airhead, plans may be made in some detail to employ the battalion defensively instead of offensively, and an expert on the defensive capabilities of tanks will be present to assist in the integration of the antitank defense possibly along an entirely different airhead line than anticipated. Changes in priority of movement of elements of the tank battalion may be in order; the tank battalion commander, knowing the SOP order of movement of his unit, through use of communications with the follow-up echelon, can so change the order of march as to take maximum advantage of the road net in the airhead and facilitate the early and effective employment of his tanks in the new mission. Due to his early presence in the airhead, he can serve as an advisor to the airborne division commander in the earliest stages of any planning which may involve changes in the mission of the tank battalion on its arrival. Through use of his reconnaissance elements, he can insure the unimpeded deployment of his unit on its arrival by route reconnaissance which otherwise would have to be done by less qualified and otherwise occupied personnel who might have less interest in the matter than would the tank unit commander himself. Reconnaissance of routes of advance, if made by airphoto study, is always uncertain as to completeness and accuracy.

In the integration of communication facilities on arrival of the tank unit in the airhead, no unusual problems are presented; the comparison to the communication problem on the beachhead is one that still holds. No unusual problems of coordination in maintenance or supply matters arise; major facilities for these services arrive with the follow-up echelon and will normally not be present in sufficient strength in the airhead to support armored units. Medical support within the airhead should have been worked out in connection with the early planning insofar as the supporting armored units are concerned and should present a problem of coordination only as to details resulting from changes. Coordination with artillery presents no unfamiliar problems. Special requirements of the armored unit for engineer support may be expected to be fairly common and can be worked out in conference, and on the ground, between the armored unit commander and the engineer officer in general control within the airhead. The G-2 picture can be watched as it develops from the most advantageous position and can be followed up by the tank battalion commander's own reconnaissance personnel in the event that intelligence matters arise of particular interest to armor.

The organization of the airborne division more closely approaches that of the infantry division as time goes on. No special organizational problems are presented by the existing differences between the airborne division organization and that of the normal ground infantry division.

That is, in outline, a portion of the picture of the tank-airborne division operations as they are today and would be in the war of the very near future. It is highly gratifying to find young officers who are thinking ahead along these lines and who are maintaining an interest in operational matters still under development and test. Many of these techniques will be of increasing importance in future warfare.

I wish you every success in your hope for future assignment in an armored unit which is associated with an airborne division.

C. E. BYERS,
Major General, USA,
Commanding, 82d Airborne Division.

Fort Bragg, N. C.

AN IMPORTANT SUBJECT

Intelligent analysis.

The article in your September-October issue entitled "A One-Dimension Force?" by Theodore S. Hecht, is one of the most intelligent analyses of the military situation of the United States that has yet appeared in print. Perhaps the most grave problem facing this country in the determination of its national security program, for the present and the future, is that one touched upon by Mr. Hecht. I speak, of course, of the prevalent misconception that the advent of the "Atomic Age" has eliminated the need for an Army.

Although billions of dollars are being spent and hundreds of thousands of men are putting out their efforts under the category of "Army," the bare truth is that the United States today lacks Army combat forces to a shocking extent. The seriousness of the situation has been repeatedly pointed out by General Eisenhower and General Bradley and other top responsible Army officials. However, the appeal of air power as a panacea for our defense problem has been overwhelming, especially in the minds of influential legislators.

It is too bad an article like the one of Mr. Hecht's must be limited to our service journals, for that is the kind of message which should be gotten to the public at large and to the United States Congress in particular. In any case, you are to be congratulated for your editorial wisdom in selecting such a timely and authentic appraisal of the Army's problem; that is the making of a case for land forces in modern war.

LT. COL. DONOVAN YEUELL,
Chief of Information,
Command & General Staff College.

Fort Leavenworth, Kans.

ONE LANGUAGE

The need of the universe.

In your November-December, 1948, issue Captain George W. Bailey, Jr., of the Air Force Reserve, takes me to task for not having mentioned Esperanto as one of the World Interlanguages.

Of course I should have mentioned Esperanto, not only because of the intrinsic merits and structure of this tool of communication, but also because it has stood up and been tested for half a century now. My four-year residence in Japan (during World War I) gave me occasion to visit the Esperanto Clubs in Tokyo, in Seoul, Korea, in Yokohama, Kobe, etc. I not only have met many Esperantists, but in the publication of the WORLD SALESMAN, of which I was the editor, we had an Esperanto Fako, where we gave lessons in this language and published articles on international trade. Unfortunately, the reception of this feature of our magazine by the business community over the world, where the magazine circulated, did not encourage us to continue, nor did it reflect any wide acceptance of Esperanto by businessmen, whom it could serve most advantageously.

I am convinced that, quite aside from the utilitarian and ideological aspects of one world language, the actual economy made possible by one international business language would be stupendous. In fact, the economies would be so great and far-reaching as to have important socially constructive implications and possibilities.

Alas, Esperanto today, after almost fifty years, has still not been taken up by the business fraternity. Maybe it would be an excellent idea if the people who have charge of the indoctrination of the military forces of the world would adopt Esperanto as the international auxiliary language of the profession. Here, too, tremendous savings and priceless efficiency could be gained.

MAX SHEROVER, Director,
Linguaphone Institute.

New York City.

CARDED

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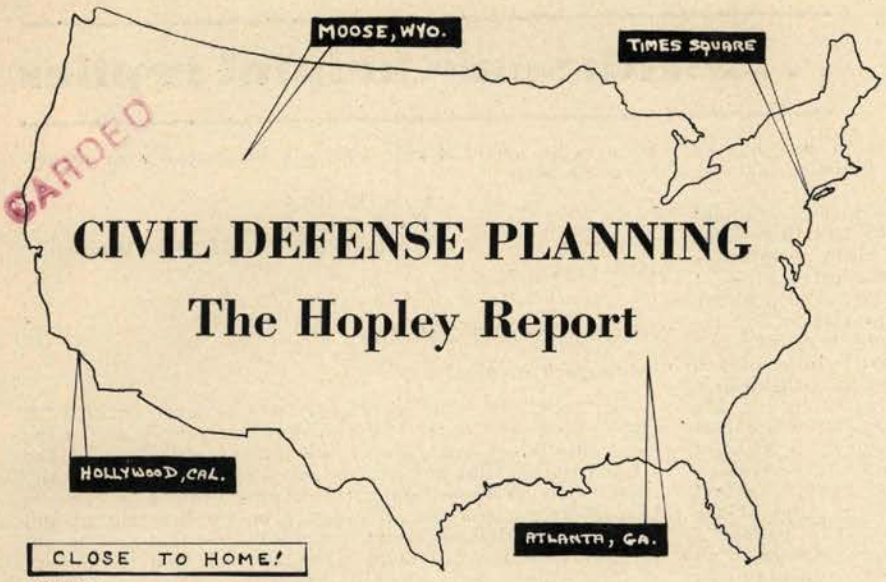
CIVIL DEFENSE PLANNING

The Hopley Report



CLOSE TO HOME!

ACJ-Bell

SECRETARY of Defense Forrestal recently made public the report of the Office of Civil Defense Planning recommending a permanent peacetime program of civil defense which could be quickly expanded in the event of an emergency.

Terming the absence of any organization of the people to minimize the effects of possible enemy action "the missing link" in our defense structure, the planning agency set down the results of its more than six-month survey to supply a comprehensive manual for guidance of states, communities, public and private organizations, and the entire civil population.

Because of the immensity of the problem and wide range of subject matter covered, Secretary Forrestal announced that he would withhold action on the report until receiving the comments of interested agencies of Government and others who have not had an opportunity to study its contents.

Russell J. Hopley of Omaha, who obtained leave from his position as president of the Northwestern Bell Telephone Company to serve as Director of the Office of Civil Defense Planning and deputy to the Secretary of Defense in civil defense matters, directed development of the plan in fulfillment of the terms of a directive issued last March.

Basing its recommendations on the pooled thought of specialists drawn from essential fields of participation in an over-all program, the Hopley group proposed:

A National Office of Civil Defense, with a small staff, to furnish leadership and guidance in organizing and training the people for civil defense tasks.

Basic operational responsibility to be placed in states and communities, but with mutual assistance plans and mobile supporting facilities for aid in emergencies.

Maximum utilization of volunteers, existing agencies and organizations, and all available skills and experiences.

Well organized and trained units in communities throughout the United States, its territories and possessions, prepared and equipped to meet the problems of enemy attack, and to be ready against any weapon that an enemy may use.

U. S. Army

Russell J. Hopley

Intensive planning to meet the particular hazards of atomic or any other modern weapons of warfare.

A peacetime organization which could be used in natural disasters even though it may never have to be used for war.

In his letter of transmittal to Secretary Forrestal, Mr. Hopley commented:

> "It is the purpose of this report to recommend for adoption a permanent peacetime system of civil defense which will round out our defense structure and which, in the event of an emergency, can be quickly and easily expanded to meet the exigencies of a given situation.
>
> "In the event of a future war, which might come to our shores, all of the people, all of the facilities and all of the skills and energies of the nation must be utilized to the fullest extent. To successfully carry out this program will require the cooperation of every man, woman and child in this nation. It is on such principles that civil defense must be erected and it must be with such a requirement that its organization be perfected.
>
> "We hope that the Civil Defense Organization will never need to operate for war, but we dare not gamble on that hope. We who have studied the problem feel a great need for prompt action in establishing such an organization. To be without it leaves us in a most vulnerable position."

The report represents a summary of the over-all plan which requires Federal, state and municipal legislation for necessary implementation. It is pointed out that detailed technical supplements and training manuals, some of which are in the process of preparation, will be issued after passage of appropriate legislation, by Congress and the States.

Mr. Hopley said that the principle of State and local responsibilities under Federal leadership has been reviewed in general with the Governors' Conference, the Coun-

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cil of State Governments, the American Municipal Association, the U. S. Conference of Mayors, and kindred groups. A resolution of the 1947 meeting of the Governors' Conference is quoted as follows:

> "The establishment and the effective operation of an adequate civil defense program is an all-important part of the first line of security for the Nation and the States. The exigencies of the world today make such a program vitally necessary. The Governors' Conference, therefore, pledges its support of a properly conceived civil defense program. The Conference wishes to emphasize—and experience during the last war has amply demonstrated—that efficient operation cannot be achieved unless the Federal Government will work through and with the State Governments."

Included in the report is a suggested Model Act for guidance of the States which has been prepared in accordance with the over-all concept of operational channels from the Federal Government to the State governments and from the States to their political subdivisions.

The approach in planning local and state organizations of civil defense is the same in that existing agencies common to most states, cities and municipalities provide the framework. Only such agencies as are not ordinarily found in peacetime governments have been added. Councils of citizens to assist those directly charged with administration of civil defense are proposed at the state, city and local level.

In recommending that an Office of Civil Defense be established by Congress within the Executive Branch of the Federal Government, headed by "a director who should be a civilian of outstanding ability and qualifications," the report further observes:

> "There are but a few places within the Executive Branch where this office could be properly placed. The two most appropriate of these would be: one, reporting directly to the President; the other, reporting directly to the Secretary of Defense. Since a very large part of the civil defense program will require continuous coordination with all agencies responsible to the Secretary of Defense, it seems reasonable that the latter would be preferable.
>
> "The Office of Civil Defense should have representation on the Munitions Board and The Research and Development Board. This representation would expedite the integration of the civil defense plans with those of the Armed Forces."

Throughout the report which lists minute specifications for national, regional, state, community and individual participation within some 25 separate chapters pertaining to operations and services, basic principles are reiterated having to do with the following:

CIVIL DEFENSE FUNCTION: Civil Defense for the future, as contrasted with civilian defense during World War II, is explained. The function is defined as mobilization, organization and direction of the civilian populace and necessary supporting agencies to minimize the effects of enemy action directed against people, communities, industrial plants, and other installations—and to maintain or restore those facilities essential to civil life.

PEACETIME OPERATIONS: A minimum organization is contemplated all along the line, ready to expand if the need arises.

TRAINING: Necessity for training of certain technical and key workers in advance of an emergency has been recognized. Particularly is this urged in the field of Radiological Defense.

SELF-HELP: Those things that an individual can do to help himself, his family, his neighbors, have been set down as a fundamental concept. This same principle continues in suggested organizing effort by communities and industrial plants to protect their own people.

The entire report makes a realistic approach to the possible use of atomic and other "special weapons" by a hostile power in a surprise attack on some densely populated area of the United States.

In language understandable to the layman, the chapter on "Radiological Defense" explains in considerable detail what can be done in the way of protective measures.

Detection and avoidance of radiological hazards is listed as the basic principle for all radiological defense operations within the civil defense program. The report points out that the presence of ionizing radiation can only be detected by means of special equipment operated by technically trained personnel.

It is proposed that Area Survey and Technical Services Units be included in the local civil defense organizations consistent with training and operational plans promulgated by the National Office working with and through the States.

The report points out that whereas other elements of civil defense currently exist in some degree, the requirements of Radiological Defense are peculiar in that no nucleus of organization now exists, and the source of personnel to receive training in conformity with that of the National Military Establishment probably would be largely teachers of physics and related sciences in the secondary schools, colleges and universities.

The report further observes:

> "Education of the public in respect to the *true* potentials and *actual* limitations of atomic warfare is the only means by which the civil population may be adequately prepared to meet the eventualities of atomic attack. Prompt development and implementation of such an educational program is a major undertaking of vital importance to national security.

> "No previous type of warfare has offered such rich opportunities to exploit fear of the unseen and the unknown. It is, therefore, obvious that the primary objective of a program of education of the public in respect to atomic warfare should be to dispel the current unjustified fear of the radiological hazards involved in such warfare and to develop a wholesome understanding of and respect for the potentials of atomic weapons.
>
> "All technical facts and figures which may be utilized must necessarily be concurred in by the Atomic Energy Commission, the Military Liaison Committee, the Armed Forces Special Weapons Project and other governmental agencies directly concerned."

Possibility of the use of war gas by a future enemy is covered in the chapter dealing with chemical defense. The plan of action recommended in the Hopley report would be:

> Immediate establishment of a Chemical Defense Division in the Office of Civil Defense, qualified to proceed with the formulation of an organization which may readily be expanded for emergency use.
>
> Training of individuals in knowledge of war gases, how to protect against them and first-aid measures for gas casualties.
>
> Such education of the public as is essential to assure awareness of potential danger and the steps required in the event of enemy attack.
>
> Constant research in methods to protect against war gas attacks, and in the care and treatment of war gas casualties.

The report discusses "other special weapons" now known and expected with future scientific developments. It is proposed that the Office of Civil Defense include a special division to collaborate with the Research and Development Board, the Armed Forces, and other interested groups in developing appropriate defense measures.

Recognizing that an enemy attack utilizing conventional or unconventional weapons might come with such force that no state or community could count entirely on its own resources, the report urges a system of Mutual Aid and Mobile Reserves. Complete patterns of organization for mutual assistance are provided.

These proposals relate to arrangements whereby one city which has escaped attack would send trained forces to another stricken area. Similarly, it is recommended that key Mobile Reserve Battalions be organized under state control with Federal assistance and supervision. Such mutual aid agreements between neighboring communities and neighboring states would assure skilled crews of firemen, police, engineers, doctors, nurses, rescue workers and others.

In specifications for the many technical services required under an over-all program, attention is called to the vital role of the communications industry. Peacetime and emergency functions are listed for telephone, telegraph, radio in all of its forms, and other special systems.

Organization of Air Raid Warning and Aircraft Observers in the Civil Defense Program to assist the Air Force in its responsibility for air defense of the nation is proposed.

Police and fire services are recognized among the essential elements of civil defense which are already organized for the protection of people and property. The report outlines expanded functions which must be planned in peacetime. Medical and Health Services are completely surveyed in the report and specifications listed for effective operation during a period of emergency.

The chapter on Engineering Services covers many subjects including provisions for blackout, dimout, camouflage, protective construction, shelters, city planning and sanitary engineering.

Problems of rescue are dealt with in a separate chapter. Organization patterns and techniques for emergency movement of large numbers of people will be found in three chapters headed: Transportation, Evacuation and Civilian War Aid. The latter deals with possible emergency clothing, feeding, sheltering and rehabilitation of the victims of a large-scale disaster.

Other chapters describe the functions and where applicable the Federal, State and local relationship of the following:

> Plant Protection, Manpower Requirements, Supply System, Public Information, Control Centers, Incident Officers, and Civil Air Patrols.

In his letter to the Governors of the States, transmitting the report to them for consideration, Mr. Hopley said:

> "In conclusion, I want to emphasize that the report is still only the report of a planning group to the Secretary of Defense and that it cannot yet be taken as reflecting the position of the National Military Establishment or the executive branch of the Government with respect to a civil defense program and organization. While my own planning group is naturally convinced of the soundness of its recommendations, it is obvious that a report which concerns the entire civilian population and is of interest to so many governmental agencies must be subjected to the most careful scrutiny and review before it can finally be approved. Mr. Forrestal is soliciting the views of all other interested federal agencies and of all major components of the National Military Establishment, and he would, I am sure, welcome any recommendations which you yourself might wish to make. When all these comments have been received and considered, the report in its present form, or as modified as a result of such consideration, will be referred to the President for approval and subsequent submission to the Congress."

Light Armor in the Airborne Role

CARDED

by CORPORAL CASILEAR MIDDLETON

Air transportability of armor is a potent subject today. As equipment is developed the organizational needs will be adapted to meet the medium. This article from the ranks of enlisted authorship is a contribution to appraisal of a still flexible area.

Airborne Armor

ARMOR must be employed in the airborne assault. It must no longer be looked upon as an added attachment solely for the purpose and exigencies of sustained combat operations. Armor should become an organic part of the Airborne Division. For the purpose of this article, I submit the Armored Cavalry Squadron (Airborne) with fond hopes that perhaps this writing will stimulate progressive thinking along these lines.

The violent shock action which characterizes the armored attack, if added to the paralyzing effectiveness of the airborne assault, would indeed be a triple threat weapon at the disposal of a theater commander. A light, aggressive, armored team working in unison with a strong force of parachute and glider infantry could accomplish much more than either one operating individually.

If another war should come, there is a definite possibility that we shall be unable to gain the overwhelming air-superiority which we enjoyed in the latter phases of the last great conflict. It is sensible to assume that for this reason, our initial airborne operations will be limited to darkness. Granted, the hazardous nature of the night landing cannot be minimized. Personnel and vehicular losses will be encountered and often considered severe. These should be vastly offset by the tremendous tactical value of the infantry, armor, and artillery which have been safely landed and established on the ground.

The areas chosen for the landing of airborne armor must be carefully considered. The stability and *good-going* properties of the terrain must be ascertained. There must be an extensive road net in the zone and this must incorporate the majority of the priority objectives as well as easy accessibility from the surrounding LZs and DZs.

Glider vs. Free Drop

The glider should be retained for the purpose of landing armor despite certain schools of thought which advocate discarding this aircraft in favor of droppable and detachable compartments. The *free drop* of armor would be the cause of a terrific amount of confusion and unforeseen difficulties arising to confront the crews upon landing. Orientation and reorganization would be a definite problem. Doubtless some units would land in woods or perhaps swamps and be unable to move off on arrival upon the ground. Many units would probably be landed a great distance from a road. It is the roadability of light wheeled and tracked armor which makes it worthy of employment in the initial landing. With this roadability severely retarded by *free drop* methods, it is doubtful that much will be achieved. A glider is capable of being guided and *aimed* at a definite landing point. An armored vehicle and crew, safely landed on, or adjacent to, a road or other satisfactory artery, would be able to exploit quickly their roadability, and get out on the road net and astride their objectives in record time. Necessary equipment for bridging roadside ditches, such as wire matting and steel channels could easily be carried within the aircraft.

Detailed reorganization and assembly upon landing will be impractical due to the scattered nature of the airborne landing during darkness. Teams will, in most cases, use the Ranger tactic of collecting crews en route to the objective or upon the objective after it has been secured. It will be standard procedure for individual crews to make for their initial objective immediately upon landing without awaiting other team members. The road net must be occupied before

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Corporal Casilear Middleton has had a varied service career. In the period 1930-37 he attended Greenbrier and New York Military Academies. From 1937-41 he was a member of the 5th Regiment, FMF, United States Marine Corps. During the war, from 1941 to 1945, he served as Reconnaissance Officer with the 1st Royal Dragoons and the Royal Canadian Dragoons, British Eighth and Canadian First Armies. In 1948 he reenlisted in the United States Army and is now an instructor in the Command and Staff Department of the Armored School, Fort Knox, Kentucky.

security of the area can be achieved. This security is imperative for the welfare of the main assault drop, and the establishment of the air-head.

Employment

There will be an immense range of employment which the armored cavalry squadron (airborne) is capable of accomplishing. It can be utilized as initial protection for the pathfinder teams. It will operate as a mobile information and security screen, charged with notifying pathfinders as to safe and dangerous areas within and surrounding the perimeter of the objective area. The pathfinders will in turn be able to notify elements still aloft as to the necessary changes of plan in the DZs and LZs. It may perform normal security missions and will carry out planned demolitions to impede enemy counterairborne movement. It should seize and hold critical terrain features until relieved by parachute infantry. It will aggressively attack, destroy, or delay enemy counterairborne columns. The confusion and shock action caused by airborne armor operating in the initial landing phase, would be a vital factor and this element of surprise must be utilized to the utmost.

Enemy counterairborne forces probably will be composed of light wheeled armor and motorized infantry equipped for speed in movement. To achieve these ends the preponderance of his vehicles will be wheeled and road-bound. This will necessitate the enemy to limit his initial operations to the road net where he can be engaged by airborne armor and swiftly destroyed.

Taking Advantage of Speed

The impetus of the airborne attack must be maintained and the speed of deployment and assault constantly accelerated. It must be guided only with deference to time, objectives, tactical situations, and organizational requirements. Every possible means must be directed toward creating immediate superiority over the enemy in fire, movement, and the tactical concept of the action. The situation must be molded to conform with the airborne assault plan and will not be allowed to stagnate. When pressure and aggressiveness are relaxed, this situation becomes quickly apparent to the enemy and astringent countermeasures are mounted to deal with it. The enemy must be forced to commit his forces and their reserves indiscriminately. He must not be allowed the slightest respite in which to prepare against the main thrust from the air-head. To ascertain these ends, airborne armor must be employed and the violent offensive, aggressive spirit of the armored assault must accompany the entire operation.

General Gavin writes in his book, *Airborne Warfare,* "It is imperative that an airborne force reconnoiter in all directions." The employment of Armored Cavalry Squadrons (Airborne) will definitely assure the accomplishment of this prerequisite and many others just as vital to the success of the airborne operation.

Types of Equipment

Constant development in the field of cargo gliders and powered cargo aircraft makes a larger choice of vehicles and equipment apparent. The armored ¼-ton truck will hold its same important place in the airborne organizations. Its value for scouting missions, liaison, and transportation of personnel and supplies is obvious.

The M22, known as the *LOCUST* tank was developed for use in the airborne role and should be retained and modified to meet more recent requirements. The modifications considered only affect the turret and the caliber of the main battery. The power train and suspension seem to be all that can be desired.

A vehicle with the same size and characteristics that accompany the British Army's Universal, or Bren, Carrier should be developed for use in airborne formations. The Weasel which we used during the war doesn't seem to be the answer due to suspension and silhouette difficulties. A small, full-tracked "work horse" is a vital need in this new organization.

Vehicles in the supply echelon should be the 1½-ton truck, 6 x 6 and the ¾-ton truck, W/C, 4 x 4. These two types of soft skinned transport are the enswer to the need for fast, wheeled supply operation.

It is evident that the Army intends to experiment with the air transportation of larger wheeled and tracked vehicles as well as heavy artillery and prefabricated front-line installations. For the purposes of this article, it is best to adhere to the application of known vehicles which will satisfy the needs of the organization with which we are concerned. This organization must be a light versatile force supplied with equipment to best assure the accomplishment of a mission.

Arms and Armament

Weapons and their places in the organization of airborne armored teams are a vital consideration. Automatic and recoilless weapons will naturally be prominent throughout. Rocket launchers are a great factor in any surprise action and should be employed at all roadblocks and strong points charged with destroying and delaying enemy counterairborne columns.

The armored peeps should mount light and heavy machine guns. The author had a good deal of success in Italy with a 20mm Oerlikon Machine Cannon mounted in a normally equipped ¼-ton truck. This heavy fire-power was quite a shock to the German Infantry across the Arno, east of Florence. I doubt however, that sufficient ammunition could be carried to allow such a vehicle to participate actively in combat, for protracted periods. Each peep should carry a *Bazooka* or 3.5-inch rocket launcher and about thirty rockets. Normal quantities of fragmentation, smoke, and thermite grenades are also a definite requirement. The crew should be equipped with one submachine gun and two M-1 rifles.

The light airborne tank will mount the 57mm gun instead of the 37mm gun as previously. A coaxially mounted Cal. .50 machine gun and a *free* mounted light machine gun atop the turret would complete the vehicular armament. Normal quantities of grenades should be carried here also. The crew should be equipped with pistols and submachine guns.

The *carrier* which we covered earlier, should be charged with employing the 75mm rifle, M-20 in action. It is capable of being mounted in the vehicle or dismounted for use in the ground role. To augment and to cover this weapon, the vehicle should also mount two .30 cal. machine guns, either light or heavy, on *free* mounts. Normal grenade requirements should accompany the crew. Each member of the crew should be equipped with either an M-1 rifle or a submachine gun. These *carriers* might also carry antitank mines or such other explosives as may be necessary to accomplish demolition missions.

Due to the heavy preponderance of automatic weapons in the outline just presented, ammunition is a dominant factor and deserves a position of prime importance. All available space in each and every vehicle must be utilized for storage. Certain modifications may be necessary to enable vehicles to carry a standard load sufficient to sustain them in prolonged action while awaiting the opening of supply lines from the airhead. In most cases, it will be necessary to sacrifice rations and other articles in favor of ammunition. Emergency or *iron* rations will suffice during the first 48 hours of commitment. Troops should be prepared to *live off the country* as proper supply arrangements may be difficult to achieve if the action becomes pressing.

Personnel

The fighting echelon of each troop should consist of a headquarters platoon and three tactical platoons. All four platoons should be capable of the same type of employment. In each platoon, there should be two light airborne tanks, two light personnel carriers, and three ¼-ton trucks. A total of twelve armored peeps, eight carriers, and eight tanks per troop. Headquarters troop might have two motorcycles attached.

Each troop of the four in The Armored Cavalry Squadron (Airborne) would consist of six officers and 111 enlisted men, or an aggregate of 468 in the fighting echelon. Organization and actual practice will point out the necessities of Squadron Headquarters and attached elements.

Personnel chosen for the units should be volunteers carefully screened for intelligence, education, and languages if possible. These men must be of the highest caliber and must meet all airborne physical requirements. They should be chosen from armored formations and given a firm foundation and indoctrination in airborne principles, tactics, and techniques. Primarily however, they should be *armored* men with the smashing drive and aggressive attitude which characterizes this branch of the service.

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B. H. LIDDELL HART

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Read General Guderian's article heading up this issue of the Journal.

Only when the fighting stops do we realize the importance of historical reports of the action. Author Oleck explores the subject of combat reporting and illustrates the ideal. What better point to work from than the ideal?

CARDED

Historical Reporting of Ground Operations

by HOWARD L. OLECK

IT is a maxim among students of military history that history is the last thing we think of during operations and the first thing we think of afterward. This is most unfortunate, because perforce, we must plan future tactics in the light of past experience.

Armored records reveal comparatively little directly applicable history to study for development into future tactics, because of the relative newness of the arm. Infantry, artillery and other older arms have a vast store of records upon which to base new departures. Even the airplane has a longer history than the modern tank. For this reason and because of the as yet unrealized potentialities of modern armor, it is especially important that a body of historical studies be built up for use in training future armored leaders.

During World War II the United States War Department established the Historical Section in G2, Special Staff, as well as a number of Information and Historical units to report combat history on the ground, or at least by the method of interviews with key personnel of the units involved, while the action was fresh in their minds. Prior to that time, routine "Reports After Action" formed almost the only regular records of combat actions. Such reports must continue to supply the mass of data required for army records, important for many purposes besides historical study. To replace these unit reports by others prepared by specialists might be very desirable, from the point of view of historical study, but is obviously impracticable.

In any event, the bulk of historical data has been and probably will continue to be recorded by unit historians, who usually are officers assigned to this duty in addition to their other duties. A knowledge of the methods employed by the historical reporter specialist should be valuable to the officer who is designated to serve as unit historian. He can be much more than a recorder of dull statistics, if he will. This is true for any arm or service. In armored units it is especially true. Only thus can there be accumulated a body of dependable records sufficient to enable students of tactics to make comparative studies leading to improvements based on solid foundations.

The ideal combat historian, of course, does not exist. No one man could have all the qualities and training which are desirable for this task. Some of the qualifications which are important for a combat historian are as follows: He should be a seasoned soldier and officer, preferably one who knows combat from personal experience, so that he deals with his subject confidently. Ideally he should have combat experience in all the arms and services. He should be a lawyer or newspaper reporter or investigator, so that he can get the gist of a story and sift facts by skilled questioning and study. He should be learned in military history so that he can recognize parallels and differences in operation and execution. He should be well versed in tactics, which almost always will be the framework of his constructive efforts. He should know the weapons, organization and equipment of the units with which he will work. He should also know as much as possible about the equipment, tactics, order of battle and characteristics of the enemy forces. He should be something of a linguist so that, whenever possible, he can supplement his reports with information obtained from prisoners. He should be pleasant and diplomatic so that he can secure the cooperation of all with whom he must work, and yet not interfere with the more urgently pressing matters of the moment. He should be a master of writing and reporting so that he can write his reports in lucid and direct style. He should be a capable map draughtsman so that his reports always may be accompanied by a map or simple overlay, which alone can make sense of directions and terrain concerning which he will write. He should be a competent photographer so that he can take good photographs on the ground, at once, to put life and vision into his descriptions. He

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should have a strong sense of military values, so that he concentrates his efforts on the important points and units in an action, since he cannot possibly report properly on all the points involved. He should be altogether objective and impersonal, reporting only facts and only in extraordinary cases his own opinion. He should leave to the rewrite men the embroidering and dramatization of his story. And he should have many other qualities too numerous to itemize if he is to do his job well.

The equipment needed by a combat historian is simple, but quite important. Personal clothing and equipment, of course, are the same as those provided for all officers. A pistol is the basic weapon for self-defense, because it rarely will be needed and leaves the hands free. Good binoculars are necessary. A simple, but reliable camera, of the candid type, with a good lens so that the photographs may be blown up, is important. A fairly large map case, preferably all-plastic, is essential. Crayon pencils, ruler, and other writing tools, of course, always must be on hand. A portable typewriter is almost indispensable for writing reports. Fortunately all this equipment can be carried in a jeep. It hardly need be added that the jeep is standard equipment. Without it the reporter could do almost nothing. With it goes the driver-assistant who is the Man-Friday of the historian.

The driver should be a seasoned noncom, also combat experienced, if possible. He should have as many as possible of the qualifications outlined above. He should also be a competent stenographer and typist. He will be the bodyguard, driver, secretary and general assistant of the officer. After a little while he will also be a collaborator, and can work on his own, especially with the enlisted men. It is inadvisable to assign him to the questioning of officers except in unusual situations. He should be armed with a carbine or rifle, and should be able to use the officer's camera competently. Since he and the officer will be together almost constantly, it is desirable that the officer himself should choose the man who is to be his assistant.

The combat historian works out of the headquarters, divisional or whatever it may be, of the unit to which he is detailed. The War Room with its operational G3 and G2 maps is his orientation center. He must be on friendly and companionable terms with all the chief staff officers and unit commanders, for he will obtain most of his information from them. The G3 and Chief of Staff are most important to him. The Commanding General usually will be the best single source of information, but also usually will be preoccupied with future plans, so that his Chief of Staff and G3 will be more readily available to the historian. The other staff officers generally also are cooperative, but their information is not as important. The reason is simple. The historian's chief interest is the plan and its execution; what was the objective, how was it planned to be accomplished, what actually occurred, and why? The last item must not be misunderstood. The "why" should appear clearly as a result of the assembly of the facts, not as a matter of the historian's opinion.

Briefings, usually held every morning in the War Room, tell the historian what the objective and plan will be. They should be noted at once, as well as all changes, as they occur. Hindsight and convenient memories may give other accounts after the operation, and that is precisely what the military historian must avoid. Inaccurate reports mean future repetitions of mistakes concealed and loss of significant facts which might guide future commanders. If possible, the Commander's own account of his plan and reasoning should be obtained by interview, preferably before it is put into effect. This is the ideal technique of historical reporting, but some commanders are understandably reluctant to put themselves on record so irrevocably. Moreover, they indeed have other and more immediately pressing problems at that stage of the operation.

During the course of the operation, the historian should try to see as much as possible of the progress of the action. It is almost needless to add that he is not to become involved in combat. He will be of little service as an historian if he becomes a casualty. Certainly he can make few historical observations while he is engaged in a fire fight. In any event, modern war, with its characteristic lack of clearly observable movement on the battlefield, usually gives him little to see by direct observation. Not until after the action has quieted down will he be able to collect the really important information as to what actually happened. This he can do by the method of interview, both of individuals and of groups.

First he should get the summarized information which the G3 and other staff officers will have. From this he can determine which units, battalions, companies or combat teams carried the crucial points in the action. Then he must go to these key units and get their accounts of the action. This will be by interviews with the commanders and their staffs and by group interviews of the men who fought the most important parts of the action. Needless to say this must be done with diplomacy and due courtesy. In all cases the commanding officer should be asked to permit the interviews and to order the assembly of the group to be questioned. The interview should be informal and shared by the entire group. Almost invariably the men will be very frank and cooperative, especially if the interview is held reasonably soon after the action.

Before, during and after the action the historian should take photographs of terrain, emplacements, groups and anything else which will serve to give visual reality to his report. Maps should be marked for illustrative purposes. Often local maps and pictures, captured enemy documents and other valuable supporting documents can be found in the neighborhood. For example, the local civilian offices of a town mayor or governmental or school officials usually will contain good maps and photographs of the area. Prisoner interviews, when feasible, are of interest for later use as supplementary material. Interviews with supporting elements, such as artillery, supply units, military police and others, are very desirable. The historian's need for a driver who also is a competent stenographer will become very clear at these interviews. Nothing is more graphic than the very words of the men who fought the action, and only a stenographer can record them properly.

The interview should be only as long as is necessary to obtain the vital information. A few questions to start the story should be sufficient to get the men talking freely. Then it is best to let them tell it in their own words. To conclude the interview it always is a good idea to ask for miscellaneous comments and suggestions as to tactics and equipment. Some astonishingly keen and valuable suggestions are made by men who have just had combat wisdom burned into them by the fire of the enemy.

The interviews should be reduced to simple typed form at once. Then a brief over-all summary of the action should be written, referring to the interviews, maps, photographs and other documents which will amplify and clarify the narrative. A copy of each interview should be sent to each individual or unit from which it was obtained. A copy of the narrative should be sent to the Commanding General through his Chief of Staff. The entire report, with its supporting documents, should be filed with the next higher Information and Historical Headquarters. It should, whenever possible, be neatly typed and bound into a manila folder or other protective covering, and clearly labeled. It will go through many hands before it has served its purpose. The historian himself will mark its classification, as "Secret," "Confidential" or whatever classification the circumstances require. Needless to say, since his work is carried out in forward areas, his materials should be moved to the rear as quickly as possible. The historian and his documents might be a gold mine of information if captured by the enemy.

As soon as his report has been completed and sent along, the historian should send to G2 or S2 of the division or unit, for the information of all interested staff and line officers, whatever data and suggestions may be of immediate use to them, as disclosed from the experience of the action reported. It should not be assumed that they will have such information. Thus all can learn and benefit at once from the experience of every man. The historian also should be zealous to see that deserving men are cited for possible decoration. He is able to contribute much to the morale of the unit. He also can relay certain stories and leads to the officer who may be able to use them for immediate publication or for release to the newspapers. On this latter score, however, he must be careful to obtain proper clearance from headquarters. When this is done, usually he can consider the action as covered as far as he is concerned, and can prepare for the next one.

All these procedures are applicable, generally speaking, to any sort of action by any arm or combination of arms and services. They are most especially applicable to ground forces, particularly to armored units operating together with infantry and supporting troops. Since most ground action of the future probably will be in the form of tank-infantry teams, these procedures should be of wide general utility. With minor changes, they should be adequate for almost any sort of operation. The combat historian who values his own self-respect must follow them, or do even more. If he does he will be serving the future of his country. It is an assignment which leaves much to the discretion and industry of the individual. What he records, or fails to record, some day may cost, or save, the lives of many of his countrymen.

Military History in the College Curriculum

The place of military history in the study of history and in the curricula of American colleges and universities was discussed at a joint session of the American Military Institute and the American Historical Association last month. The meeting was held in the Chinese Room of the Hotel Mayflower at Washington, D. C., at 10 A.M. on December 28th. Members of the American Military Institute and subscribers to *Military Affairs* were particularly urged to attend. All those interested in military history were made welcome.

Dr. Douglas S. Freeman, eminent historian, journalist, and authority on the Civil War, presided. The speakers were Dr. James Phinney Baxter, III, President of Williams College, and author of *Scientists Against Time,* Dr. Robert G. Albion, professor in Princeton University, and historian of the United States Navy in World War II, and Professor Theodore Ropp of Duke University.

Military history has had a minor place in the studies and writings of American historians and in the curricula of American colleges and universities. The object of the session was to review this situation in the light of the present interests and outlook of the United States, and in the light of opportunities for research and instruction in this field which have developed during and since the recent war, particularly in connection with the historical programs of the Air Force, the Army, and the Navy.

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THE FAR EAST: FROM OPEN DOOR TO CLOSED CURTAIN?

SOVIET RUSSIA AND THE FAR EAST. By David J. Dallin. Yale University Press. 398 pp. $5.00.

A feature review by
Vera Micheles Dean

The attention of the American public, for three years focused upon Europe, with its attendant problems of East-West tensions, the future of Germany, the European Recovery Program, and the alàrums and excursions of the Cominform, has now been abruptly diverted to Asia, where the tide of Communist victories in China, unrest in Indo-China and Indonesia, and the rise of India to Asiatic leadership create a new series of problems for the United States. And in appraising the course this country should henceforth follow in Asia, the key question now being asked, as in Europe, is: What will Russia do?

To this question, David J. Dallin, Russian-born Socialist who spent a number of years in Germany before and after the first World War and now lives in New York, gives no direct of explicit answer. What he does is to furnish a very useful, quite elaborate summary, written in textbook style, of the Soviet government's activities in Asia since 1931. In his preface he indicates that this volume will be followed in the spring of 1949 by one covering the history of the period from 1860 to 1930, thus providing a comprehensive view of the role Russia has played in Asia under both Tsarist and Soviet rule.

Mr. Dallin has never concealed his disapproval of, and his hostility toward, the Soviet government, and this must be borne in mind by readers of his book. Nevertheless, as one who supported Socialist ideas at the time of the 1917 revolution, it must be assumed that he also did not approve of Tsarism, and of the policies followed by Tsarism in Asia. He indicates the tenor of his thinking on page 238 when, discussing the theory held by some that social transformations are "the only means of achieving universal lasting peace," he criticizes this theory as contrary to the facts, and goes on to say: "Aggressive wars had occurred in history long before the emergence of a capitalist economy; strong expansionist tendencies are present in Soviet policy despite the abolition of all vestiges of capitalism there, as has been true of Communist Yugoslavia since the end of the war. Imperialist aggression has not been and is not the monopoly of any distinct economic system." This is a very realistic view of the world as it exists, if not as many of us wish it could be; and presumably Mr. Dallin would apply his judgment also to socialist governments, especially in the light of the policy followed by British Foreign Secretary Bevin with respect to Palestine.

Starting, then, from the sound assumption that even the Communist governments are apt to be intensely nationalist (an assumption not always borne in mind by some of Mr. Dallin's socialist friends who are inclined to interpret every action of the Kremlin as inspired solely by Leninist-Stalinist doctrine), the author proceeds to analyze Russia's far-ranging activities from 1931 to 1948 in China, in Korea, in Mongolia, and in Sinkiang, as well as its relations with Japan, its open enemy in 1904-05, its more veiled opponent at the end of World War I, and now the potential base of American challenge to Russia in the Far East. Mr. Dallin's detailed account, illustrated by several useful maps, should be of value to American readers, especially where he covers less familiar material, as in his summary of the way Russia has consolidated its position at Dairen, and his discussion of the situation in Korea.

The value of this timely book, however, would have been greatly enhanced if the author, instead of merely setting down chronological analyses, had undertaken a broader synthesis of Russia's role in the Far East, and had been willing to draw more extensive conclusions from his own examination of this formative period in Russo-Asiatic relations. It is clear from his presentation, and will doubtless be made even more clear in the perspective of the volume he promises on the earlier period, that Russia has played an important role in the Far East for about two centuries—long before the United States became an important factor in that area. This role, moreover, is found to increase in weight—and not only in military weight, but in terms of the economic and ideological influence Russia exerts on its more backward Asiatic neighbors—as the U.S.S.R. itself grows in economic development, and especially as it proceeds with its plans for industrialization and modernization of the Soviet Far East, which in a very real sense is the colonial hinterland of Russian possessions. Short of dropping atomic bombs on Russia—a course that has some advocates in this country—it is difficult to see how the position of power and influence now held by Soviet Russia, but previously held also by Tsarist Russia, can be altered today by the United States.

The main problem of American policy with respect to Russia and Asia, then, is not how to get rid of Russia, since this seems to be made impossible by geography, if

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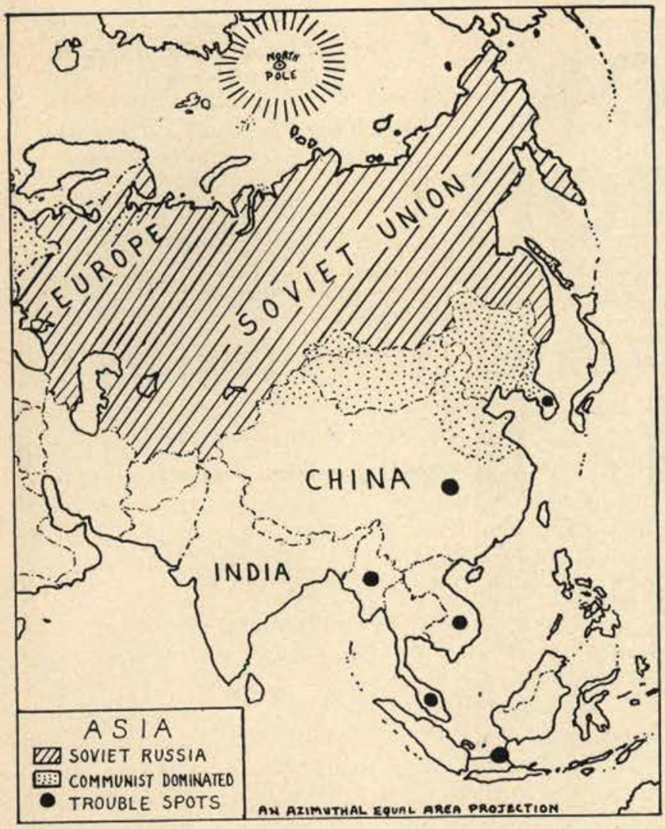
Vera Micheles Dean was born in Russia. She came to the United States at the close of the First World War, completing her naturalization in the late twenties. A graduate of Radcliffe College, she holds degrees from Yale University, Wilson College, and the University of Rochester. Lecturer, author and editor, she is one of our foremost authorities on Russian affairs. Her latest book, *The United States and Russia*, is one in the series of the Harvard Foreign Policy Library.

Mrs. Dean is an editor and the Research Director of the Foreign Policy Association.



by nothing else, but how to make sure that Russia will not continue on the course on which it started under the Tsars of slowly pressing forward along undefended borders into areas settled by people weaker and more backward than the Russians. It is in this respect that Mr. Dallin's book proves to be disappointing. For, as he candidly states, his book is concerned with what Russia's activities in Asia have been, and he chooses not to discuss conditions in the Asiatic countries on which Russia has impinged, encroached, or exerted influence, except insofar as he discusses the composition and operations of native Communist groups. While this is a selection of material that it is legitimate for every writer to make, the result is that Russia's Far Eastern policy appears to be operating in a vacuum. For to a reader unfamiliar with that part of the world, it is difficult to imagine why the Asiatic peoples along Russia's borders can seemingly be so easily pushed around, until one knows something of the conditions under which these people have been living for centuries, and of their distastes or prejudices toward their Chinese overlords, for example, or toward Western colonial powers. If an American reader is to get some understanding of the circumstances under which Russia has come to assert itself in Manchuria, Mongolia, and other broader areas, he is advised to consult the writings of those who have made on-the-spot observations in these areas, notably Christopher Rand of the *New York Herald Tribune,* now on leave as a Nieman Fellow at Harvard, who contributes a very illuminating article on the subject in the January issue of *Harper's.* It would also be useful, in order to see Russia's Far Eastern policy in perspective, to compare it, for better or worse, with the policies of other great powers in Asia —always bearing in mind Mr. Dallin's basic dictum that imperialism and expansionism are not the hallmarks of any given regime, and, as might be added, take a great variety of forms.

Mr. Dallin's conclusion, too, might well be weighed not only by Russia, but by all powers that seek or have sought and acquired colonial possessions. The vast areas of Asia into which Russia moved, he says, "were acquired in order to enhance the power of the state and to invest its rulers with an aura of greatness and invincibility. The people of Russia, indifferent to these colonial expeditions, were consulted neither by the Tsarist government 50 years ago nor by Stalin's government today." This is true, and how true, too, for example of the democratic British people, who were profoundly indifferent to the vast empire collected by the British government, and who were not consulted in any way as late as this year by a Socialist government which threatened Israel with reprisals if it interfered with fragments of the British Empire in the Middle East. What is the remedy for this situation, which is clearly neither specifically Russian nor particularly Soviet. To this reviewer, at least, the only workable solution is for the great Western powers to put Russia on the spot by showing a greater regard for the rights of weak peoples—by leading the way toward new forms of human relationships between advanced and backward nations, as Britain has done in India and the United States in the Philippines.

Brief Notices

FOLLOW ME! The Story of the Second Marine Division in World War II. By Richard Johnson. Random House. $6.00.

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THE HISTORY OF THE 27TH INFANTRY DIVISION. By Edmund G. Love, Division Historian. Infantry Journal Press. $10.00.

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THE GOLDEN CROSS: HISTORY OF THE 33D INFANTRY DIVISION. Infantry Journal Press. $7.50.

◇ ◇ ◇

THE BIG CIRCLE. By HO-yungchi. A story of the Chinese end of the Burma Campaigns, 1942-45. $3.00.

◇ ◇ ◇

ORDEAL BY FIRE. By Fletcher Pratt. William Sloane Associates. A revised edition of a history of the Civil War, first published in 1935. In one volume. $5.00.

◇ ◇ ◇

RIO GRANDE ROBERT. By J. V. McDowell. Illustrated by Anthony Stanush. 96 pp. San Antonio, Tex. The Naylor Company. $2.00.

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Book Notes

Houghton Mifflin Company announces that THEIR FINEST HOUR, Volume II of Winston S. Churchill's

THE SECOND WORLD WAR, will be published in the United States on April 4, 1949; there is every reason to believe that the third volume, THE GRAND ALLIANCE (the tentative title), will be published in October or November of this year.

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THE GATHERING STORM, Volume I, sold more than 92,000 copies through the bookstores in 1948.

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A second book of war memoirs by Field Marshal Viscount Montgomery of Alamein has been scheduled for publication. Almost a year ago Houghton Mifflin issued "Normandy to the Baltic," his book about the European theater. In February, Dutton will bring out "El Alamein to the River Sangro," his story of the campaigns of the Eighth Army in North Africa, Sicily and Italy.

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An intimate study and biography of Georges Clemenceau by Wythe Williams, entitled "The Tiger of France," has been scheduled for release in February, by Duell, Sloan & Pearce. Mr. Williams was a foreign correspondent for twenty-six years and a close friend of M. Clemenceau. During the last years of the "Tiger's" life, Mr. Williams traveled with him and acted as escort and companion on his final trip to America. The biography presents new facts about Clemenceau's role in French politics and the post-war conflict with Foch.

◇ ◇ ◇

Another book of war memoirs is planned for publication by Henry Holt. It is "To Hell and Back," by Audie Murphy, "the most decorated soldier of World War II." The book will be issued on Feb. 28 to coincide with the release of the motion picture "Bad Boy," which stars Mr. Murphy.

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Harper reports that John Gunther is at work on a new book, "Behind the Curtain," tentatively set for May publication. Mr. Gunther, who recently returned from Europe, presents his views of the countries dominated by Russia, as well as portraits of leading Europeans, among them the Pope and the King of Greece.

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William Sloane Associates will publish Fletcher Pratt's new book—"Eleven Generals: Studies in American Command," in March:

Through the careers of eleven American commanders, in actions and campaigns from the Revolution through World War II, Mr. Pratt traces the development of the distinctive and original American contribution to the science of warfare. This contribution is the use of infantry, armed with individual weapons designed for aimed fire, as the major element in offensive operations. This theory, as applied and developed in action over the years, has been consistently successful against the widely varied military plans and methods it has had to confront.

The Best Sellers

With the kind permission of The New York Times Book Review, *here is an analysis based on reports from leading book sellers in 22 cities, showing the sales rating of 16 leading fiction and general titles.*

Fiction

Dec. 26	Jan. 2	Jan. 9	Jan. 16	
1	1	1	**1**	The Big Fisherman. *Douglas*
3	2	2	**2**	Dinner at Antoine's. *Keyes*
2	3	3	**3**	The Young Lions. *Shaw*
4	4	5	**4**	The Naked and the Dead. *Mailer*
5	5	4	**5**	Remembrance Rock. *Sandburg*
6	6	6	**6**	The Running of the Tide. *Forbes*
7	10	13	**7**	I Capture the Castle. *Smith*
8	12	8	**8**	Roanoke Hundred. *Fletcher*
14	8	10	**9**	The Hearth and the Eagle. *Seton*
9	7	7	**10**	Catalina. *Maugham*
12	14	9	**11**	Doctor Faustus. *Mann*
11	13		**12**	Shannon's Way. *Cronin*
		14	**13**	Cry, the Beloved Country. *Paton*
			14	Guard of Honor. *Cozzens*
10	11	15	**15**	Tomorrow Will Be Better. *Smith*
			16	The Crusaders. *Heym*

General

Dec. 26	Jan. 2	Jan. 9	Jan. 16	
1	1	1	**1**	Crusade in Europe. *Eisenhower*
2	2	2	**2**	Roosevelt and Hopkins. *Sherwood*
3	3	3	**3**	How to Stop Worrying and Start Living.
4	4	4	**4**	Peace of Mind. *Liebman*
6	7	5	**5**	Family Circle. *Skinner*
16	11	10	**6**	The Seven Storey Mountain. *Merton*
8	5	6	**7**	Shake Well Before Using. *Cerf*
12	9	8	**8**	The Gathering Storm. *Churchill*
7	6	7	**9**	The Roosevelt Myth. *Flynn*
5	8	11	**10**	Wine, Women and Words. *Rose*
9	10	12	**11**	The Plague and I. *MacDonald*
	12	13	**12**	No Place to Hide. *Bradley*
13	13	9	**13**	The St. Nicholas Anthology.
			14	It Gives Me Great Pleasure. *Kimbrough*
10	14	15	**15**	George Washington. *Freeman*
		16	**16**	The Life and Times of the Shmoo. *Capp*

NOTE THE NUMBER ONE BOOK

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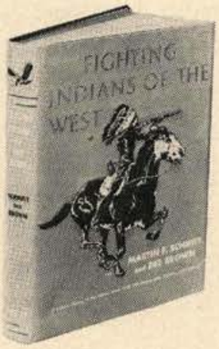

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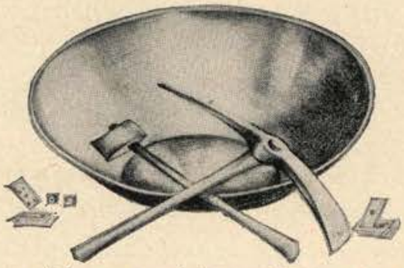

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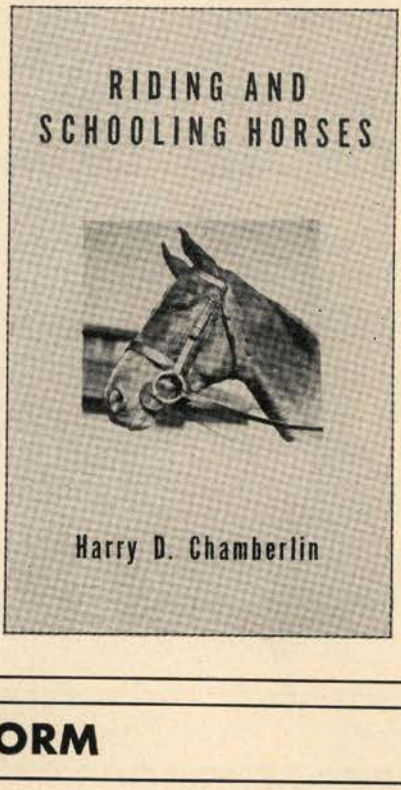

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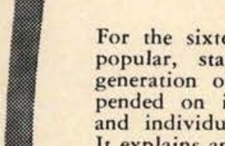

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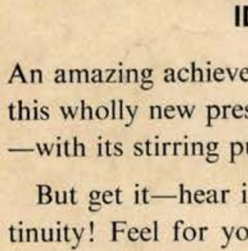

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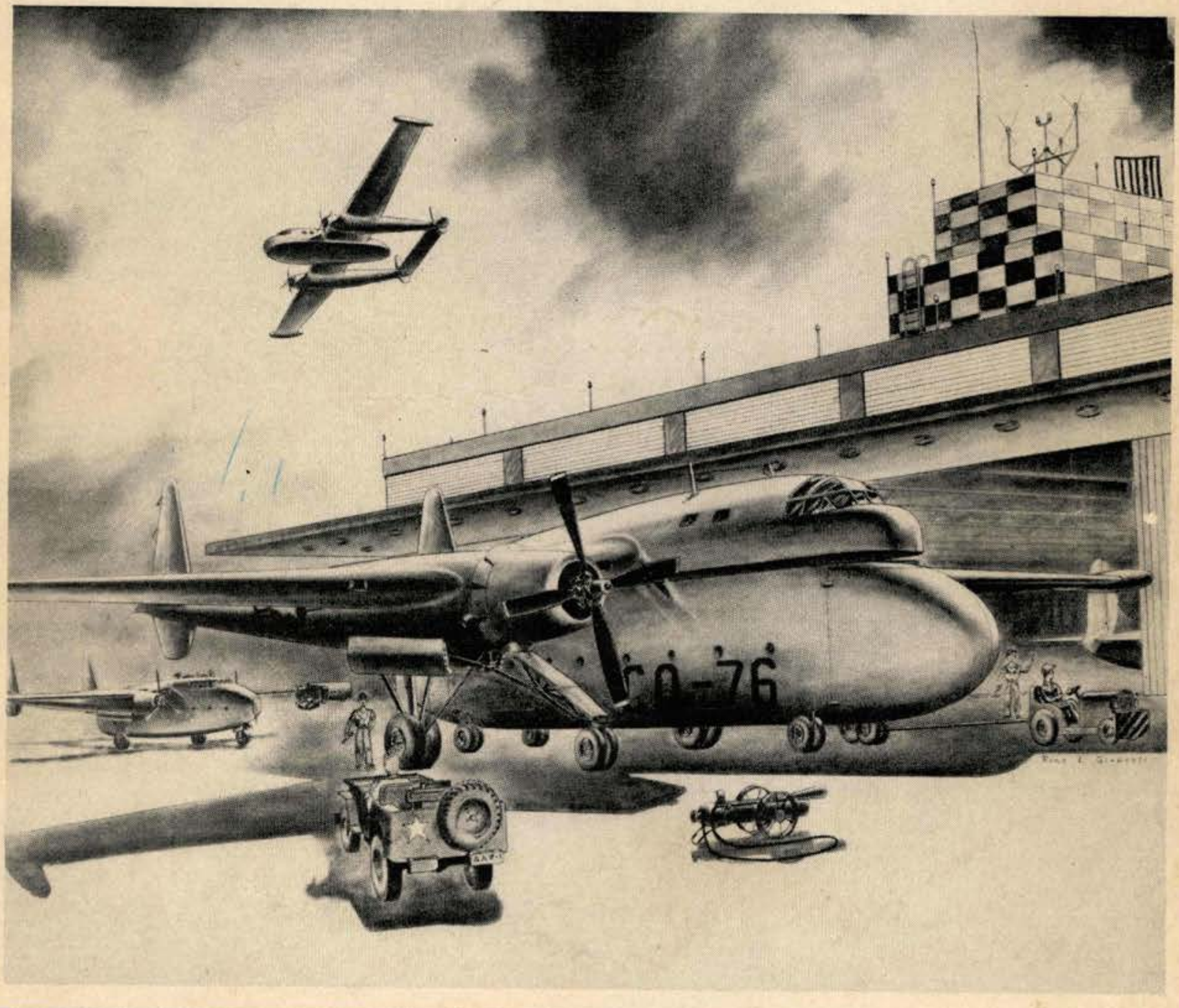

DETACHABLE FUSELAGE PACK PLANE

In the Future of Air Transportability—A Detachable Tank?

(See Page 2)

MARCH-APRIL, 1949

VOL. LVIII NO. 2

RECONNOITERING

A Journal Article

AS a subscriber, your connection with a JOURNAL article begins when you pick up your copy and settle back for a period of what we like to think is instructive, enjoyable reading. What happens prior to that moment is a story worth telling. The path from the germ idea to the consumer perusal is involved and interesting. Here's how it goes.

For the purposes of example we'll select from the last issue Colonel Curtin's article, AMERICAN ADVISORY GROUP AIDS GREECE IN WAR ON GUERRILLAS. To get to the root of the thing we must go back to the summer of 1948. We are working on a long-range basis, looking to the September-October and November-December issues, and trying to firm up the prospectus so that we have something complete at least one issue ahead.

In looking through a newspaper, we ran across a dispatch on the situation in Greece, with mention of the American Aid Mission activities. The military side of this mission holds a story. The item goes down in our prospectus. The groundwork begins with a visit to the Greek Desk in the Plans and Operations Division, Department of the Army, at the Pentagon.

A letter goes out to the proper source in Greece. All we can do now is to mull over the approach to the subject, and its treatment in the JOURNAL. A good chunk of time goes by, but we're used to waiting, and we're deep in preparation of the September-October issue. When the story finally rolls in, we sit down to the preliminary reading in high anticipation.

The article is first entered on the master log sheet. An estimate is made of the space needed in the magazine, and of sources for supporting photos. Next comes a hand submission to the Security Review Section of the Public Information Division, Department of the Army, at the Pentagon, where all JOURNAL content is cleared. A combination of courtesy and regulations farms the articles out to coordinating agencies.

SPACE does not permit detailed coverage of all things involved. Suffice it to say that the article now goes to the Greek Desk in the Plans and Operations Division for a check. Next comes the Middle East Desk at P&O. From here it journeys to the Intelligence Division for a check by the Europe-Middle East Branch. Meanwhile, the Foreign Liaison Section checks strength figures with the office of the Greek Military Attaché. So far, so good!

Still under the careful supervision of the Security Review Section of PID, the article now goes to the State Department. Here it gets the going over at the Greek Desk, Research and Intelligence, and the Greek Desk, Policy. Having accumulated by now a substantial list of recommendations and opinions, it goes back to Security Review for final clearance authority, based on all comment. Comments and recommendations are assembled, and certain amendments and deletions are integrated with the knowledge and concurrence of all agencies concerned.

Meanwhile, a trip to New York to look over the photo files of the *New York Times* and the Press Associations, along with some research in the Signal Corps Still Picture Library at the Pentagon, has produced some good shots. Another visit, to Harris and Ewing in downtown Washington, and a call to the office of the Greek Military Attaché, round out the photo details.

Checked by all sources, the manuscript is now stamped by the Security Review Section with the final clearance, "No objection to publication. . . ." The editorial spadework begins. Following a full reading, correcting, and typing to space, the copy is sent to our printer at Richmond, Virginia, to be put into galley proof. After its return in galley it goes through a close working once again: then we measure it for length and the layout is roughed up on proof pages. Final elimination leaves the best photos ready for projection and positioning in the story. We select the type for the heading, work out the page composition, write the story subhead, captions, and the biographical sketch on the author, and the material is ready for another trip to Richmond, to go into page proof. The photos go to the engraver at this time.

First real satisfaction comes with the first page proof, the rough setting of how the article will look in final form. Again we proofread the whole thing, and we have reached the point where it is ready for consideration as to its proper spot in the magazine, which will be the January-February issue of 1949, as the previous issue has been published during the lengthy clearance process. As you may recall, it rates the number two slot, following the Guderian article and preceding the leading technical article of the issue on Armored Cavalry, Light.

The path from the germ idea to your reading is a lengthy one. An article that makes the grade on editorial acceptance, and has the approval of all coordinating clearing agencies, should be good reader potential. Occasionally one or the other of these hurdles is not cleared. In the Greek Mission article we had the additional worry of a fast-moving situation involving policy, diplomacy, legislation, government, national and international politics, and a war. To have made the grade was worth a cheer.

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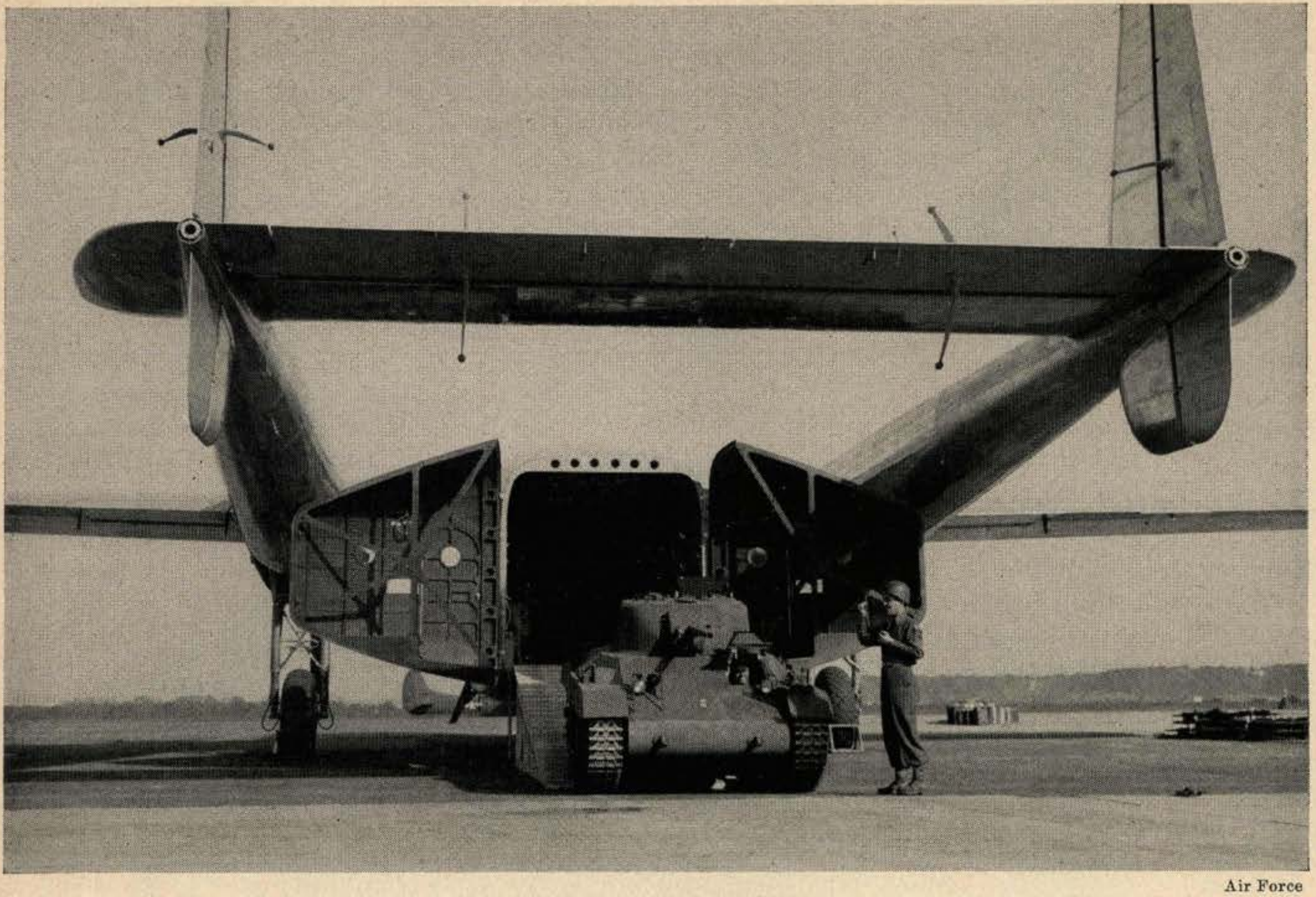


Air Force

AIR TRANSPORTABILITY

by RICHARD S. BOUTELLE

UNDOUBTEDLY one of the most spectacular developments in military affairs to come out of World War II was the movement of troops and supplies by air, which in the postwar world has come to be known as the science of air transportability. In effect, it has meant the creation of a new concept of war through air power.

But the most significant part of the wartime troop-carrier operations is that they were entirely carried on with aircraft developed for peacetime passenger operations, not for military personnel and matériel.

Design with a Purpose

By the end of the war obvious changes were indicated in aircraft design based on the lessons learned in battle. Experience with troop-carrier missions gave the Air Forces fundamental specifications for troop and cargo airplanes which would enable them to utilize air transportation to its fullest potential.

Although it was designed in 1941, the Fairchild C-82 filled the bill as a special purpose airplane, and since September 1944 has served as a test ship for this new concept in military thinking.

Today the problem of design for air transportability continues to grow in importance for both air and ground forces. The Burma airlift and the more recent supply of Berlin have proved effective examples of air transport capabilities, but they have in a sense only indicated the full potential, which is a long way from solving the problems imposed by the science of air logistics on modern military strategy.

One can no longer think in terms of the old logistical common denominator, the standard railway boxcar, with its unlimited capacity for weight and its cargo hold where goods and vehicles could be stored without regard for centers of gravity and other complicating factors of flight. The pace of military transportation has been stepped up to meet the speed requirements imposed by the prodigious use of airplanes for every conceivable phase of military operations. Obviously the logistical build-up for modern, fast-moving armies must also go by air, at least in the initial stages. This in itself is a formidable task for tacticians who must take into consideration the many more complications involved in loading a boxcar with wings over the old boxcar on rails.

Deep consideration has been given this problem, both with the Army Field Forces at Fort Monroe, Virginia, with the Army Field Forces Board Number 1 at Fort Bragg, North Carolina, and in actual experimental studies carried on

It may be some time yet before armor sprouts wings, but some important strides have been made in that difficult area. Close cooperation between the maker and the user—between the services and industry—will lick the problems. Fairchild's General Manager gives us some of the background on the highly important medium of air transportability.

jointly by the Ninth Air Force and the 82d Airborne Division. Crews must be trained to load airplanes in accordance with the weight factors and the ever-present center of gravity.

Air transport of armored vehicles and heavy artillery matériel is possible, but not immediately practicable, particularly with the equipment of the last war. Herein lies a problem. The aircraft industry must try to meet the challenge of totally airborne armies, and the ordnance and vehicle manufacturers must devise some means of lightening their equipment without seriously affecting its functions.

Weights and Tolerances

The solution may not arrive until air-mindedness has become instinctive with designers of ordnance equipment. The sheer weight of existing ordnance equipment becomes overpowering. Actually less than one-fourth of the total weight of the Long Tom or the 155 howitzer are the actual fight parts such as the barrel, recoil mechanism, etc. To cite another example, the average step on a piece of artillery is usually made of armor plate one to two inches in thickness. A similar substance is frequently used for making bolt boxes and tool kits. Obviously, lighter weight material would certainly last as long as the piece itself, and the weight saved by using magnesium or aluminum would be of material advantage in the compromise.

Close tolerances were not required on ordnance vehicles intended for railway or ship transport to the combat zone, but the complicated science of aerodynamics makes it necessary to design aircraft to within thousandths of an inch. It is a matter where every inch means more or less weight. The C-82 was originally designed to accommodate the 155 howitzer (not its carriage), but between the time the prototype of the aircraft was flown and the production model came off the assembly line, tactical considerations dictated that sand tires (somewhat wider than normal tires) be installed on the 155. When the time came to roll the howitzer into the cargo compartment of the C-82, it missed by less than two inches, a lesson in tolerances not to be overlooked.

With an Air Force background dating from the McCook Field days, Richard S. Boutelle has succeeded in maintaining that valuable combination—an Air Force mind in the Aircraft industry. At the beginning of the war he went to Fairchild as Assistant General Manager, succeeding to the position of General Manager in September 1941. He was instrumental in the development of the C-82 and he has successfully guided the evolution of the Flying Boxcar from the first C-82 to the C-119 and soon into the C-120 detachable fuselage aircraft, which promises to do more for the science of air logistics than any aircraft so far conceived.

Air Transportability Testing

A good deal has happened in the past two years to firm up air transportability plans. Board Number 1 has undertaken exhaustive tests with the C-82 to determine what kind of vehicles it can carry and what practical means can be devised to transport actual combat units from the zone of interior to the zone of combat by air in times of emergency. Everything from ammunition boxes to half tracks has received consideration. Even a tank-trailer was rolled into the 38-foot-long fuselage, clearing the roof by only half an inch. From these tests a series of loading tables was compiled to serve as a guide for future training.

This program has helped aircraft makers plan for the future. Obviously the Air Force needed certain modifications in existing airplane types to meet the expanding ideas of air and ground tacticians. It needed width and length as well as more power and greater range on the C-82. These were incorporated in the C-119 Packet, the first of which rolled out of the production line in March of this year.

While the tests were going on at Fort Benning, the Air Matériel Command at Wright Field undertook to parachute entire howitzers to the ground from the air. The previous method had been to drop the weapons in seven or eight pieces, hoping that the troopers could find all of them and assemble them on the ground. The new idea was to drop the entire piece with one 100-foot chute, thus assuring the landing troops of instant fire power. The doors were removed from the rear of the fuselage and the howitzer was rolled in on sets of rollers fastened to the floor. It was released by trailing a pilot chute which dragged the 3-ton piece out of the aircraft horizontally, immediately releasing its 100-foot drop chute. The howitzer suffered no ill effects from its unconventional landing, and was ready for use as soon as the troopers could reach it.

Similar experiments have been tried with jeeps, and plans are now under way to drop heavier reconnaissance vehicles.

Up to the present time, tactical experiments have been done on reasonable conventional aircraft, but the future holds more drastic changes in basic design for supplying the ground army in atomic-age combat.

Trailer Truck of the Air

Fairchild has under construction the C-120 Pack-Plane, so named because it combines the features of the Packet ("Pack") and a separate flight unit to be known as the Plane (or airborne prime mover). The Pack-Plane is a detachable fuselage aircraft designed to operate much as the trailer-truck does on the ground.

Root of the Problem

Logistics have always been the bugaboo of planning staffs, and the Pack-Plane shoots right at the root of the problem, loading and unloading as well as providing separate units to load and unload. With detachable fuselages in series, each can be loaded and held in readiness for the plane or tow-truck of the air. Of even greater advantage, Packs can be designed for specific types of equipment and for special types of work. At the present time, the Air Matériel Command at Wright Field has a design for a portable photo lab for combat intelligence that can produce 20,000 prints a day and can be set up, complete in every detail, in a detachable fuselage. The Air Surgeon's office has made exhaustive studies designed to reduce the weight of hospital equipment, particularly operating rooms, so that they can be built into detachable fuselages and flown to combat areas for immediate operation. With such units, and stretcher carrying "packs," the return of wounded can be speeded to even greater efficiency than it was during the war.

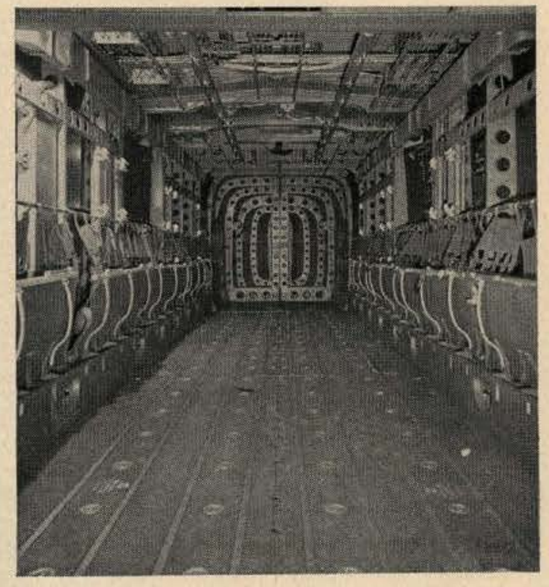
Air Transport of Armor

The real groundwork on air transport of armored vehicles has yet to be done. The distance in military philosophy between the aircraft manufacturer and the ordnance maker is still too great to foresee appreciable steps in this direction in the near future. No aircraft has yet been able to lift cargo equal to its own weight. Something has to give; and the

THE OUTSIDE

Successor to the C-82 Packet, the C-119 features greater visibility for the pilot, increased cargo capacity, and greater power. This particular model has two mock-up "radome" and IFF radio equipment units, installed on each wing tip, intended to remove bulky radar equipment from the cargo compartment to the wing tip, providing greater capacity, increasing the over-all efficiency of the aircraft.

THE INSIDE



The fuselage of the current C-82 is 38 feet long and 8 feet wide. It is 93 per cent of the standard boxcar in cubic capacity. On either side, paratrooper seats fold against the wall providing a clear area for self-propelled vehicles. It is truly a "Flying Boxcar."

high cost of existing aircraft makes it evident, from the standpoint of national economy, that if we are to carry tanks and heavy armored vehicles by air, they will have to take off a lot of weight and still retain their desirable characteristics in the fields of mobility and fire power.

A Detachable Tank?

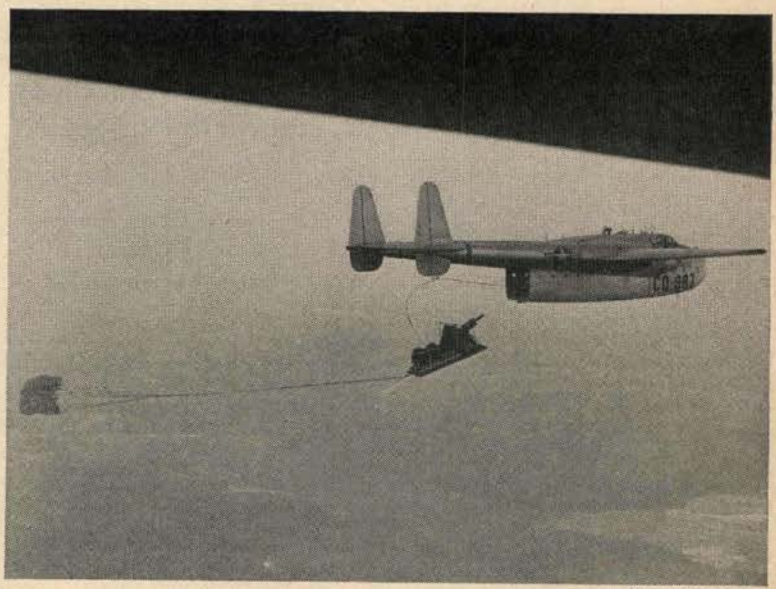
Consideration has been given to the possibility of using the Plane part of the Pack-Plane as an air carrier for tanks, attaching them in a manner similar to that designed for the attachment of the pod or fuselage. This is feasible, but, from the viewpoint of the tactician, not practical unless the weight considerations can be more closely reconciled.

The precarious position of any nation in the age of the atom bomb makes it mandatory that the United States maintain its development and encourage a closer relationship between all of the elements that go to make up national defense. The manufacturers of ordnance and the manufacturers of aircraft cannot afford to be other than totally objective as they face the obvious trend toward total air transport of America's fighting forces.

GOING IN

During "Exercise Assembly" at Camp Campbell, Kentucky in October 1947, a fleet of boxcars brought in an entire regimental combat team; unloaded; and was ready for take-off within 45 minutes. By this same means airlift for military units will characterize any future operations of the ground army.

COMING OUT



Fairchild Photos

Substantial strides are being made in the dropping of equipment from the air in support of an airborne operation. As illustrated in this picture, and in the article, we have advanced from dropping the pieces over a general area to the dropping of a complete item, ready for use of the paratroopers as soon as they get to it, thereby increasing the speed and effectiveness of an operation.

FOR TOMORROW'S AIRBORNE ARMY

(See Front Cover)

The U. S. Air Force has another ace up its sleeve: the Fairchild Pack-Plane, which will have a cargo compartment that can be detached from the rest of the airplane (in other words, from the basic airframe). This artist's sketch shows the Pack-Plane, still in the design stage, as a loaded cargo section is being pulled into position beneath the cabin by a tow truck. After the cargo hold is locked into place, the big plane will be ready for take-off.

Fairchild Aircraft Division of Hagerstown, Maryland, is designing the XC-120 Pack-Plane for the Air Force under a development contract. In many respects similar to the C-82 and C-119 Packet (Flying Boxcar), the XC-120 Pack-Plane will embody radical new features making it the last word in assault planes for the airborne Army.

The XC-120 will be able to fly with or without its cargo "pack." The packs will be interchangeable and can be completely equipped for use as field hospitals, field headquarters, repair shops, photographic laboratories, radio shacks, etc. Most packs will be convertible to carry either soldiers, cargo, or wounded men. A Pack-Plane will be able to deliver a hospital pack (for instance) at a front-line airstrip, then pick up an ambulance pack with 36 litter patients for the return trip. On its next flight to the combat zone the same plane might carry a pack filled with troops or supplies. The Pack-Plane is designed to carry a payload of nine tons.

In sketch, notice XC-120 circling overhead without its pack. It will land to pick up the pack being loaded in rear. Plane at left is the C-82 Packet, now used extensively by the Air Force. The transport of armor is a challenge to ordnance and aircraft designers.

Enlistment of Aliens in the U.S. Army

by SENATOR HENRY CABOT LODGE, JR.*

Senator Lodge will resubmit to this session of Congress his bill to authorize the enlistment of aliens in the Regular Army, which was introduced as S. 2016 for the consideration of the 80th Congress. In response to a Journal request for current background, the Senator from Massachusetts offers the following comment on the bill, which takes on added significance as we look at a situation involving restricted appropriations, curtailed inductions, retarded enlistments, and world tensions.

THIS simple proposal permits the Army (with the concurrence of the Secretary of State) to accept up to 25,000 enlistments from young men of different nationalities between the ages of 18 and 35. It authorizes the Army to conduct this experiment for a two-year period. The number 25,000 represents about 7% of the total of our Regular Army and is an amount which qualified experts believe can be effectively absorbed. These men would serve for 5 years, after which they would be eligible for American citizenship. They could be used wherever the Army found it desirable, and I believe that it is the Army's intention to use them initially in Alaska, the Caribbean and the Far East.

This bill is similar to the amendment I offered last year to the Selective Service Act and which the Senate approved on a roll-call vote. I was disappointed when it was dropped from the Act during the conference with the House and I hope that it will fare better this time.

Some of the points which should be emphasized at this time in connection with this plan are:

1. It is of enormous potential value to our national defense. We receive, in return for the benefits conferred, human talent which we can obtain in no other way and which the experiences of World War II, in our relations with friendly foreign troops, prove beyond question that we must have for training, combat, liaison and intelligence.

2. It does not contemplate any sort of "foreign legion" at all. These young foreign soldiers would be scattered as individuals throughout all Army units. They would not be isolated in separate organizations or wear any kind of distinctive insignia. They would wear regular G.I. uniforms and would live in intimate daily contact with other young Americans.

3. The literally hundreds of letters which I have received from young men all over the world show that this plan has captured the interest and enthusiasm of the cream of young manhood abroad. We could expect fine human material. Of course, the initial screening of applicants would be highly exacting and discriminating; continuous supervision during the entire term of enlistment would likewise be aggressive. This is certainly more thorough than anything of which our immigration and naturalization services are normally capable.

4. It is neither a sign of weakness nor a radical policy for the United States to welcome allies in American uniform. Foreign soldiers have fought and given their lives for the United States from the Revolutionary War through the Civil War down to World War II. My plan simply seeks to substitute an orderly legislative long-range program for the old hit-or-miss method.

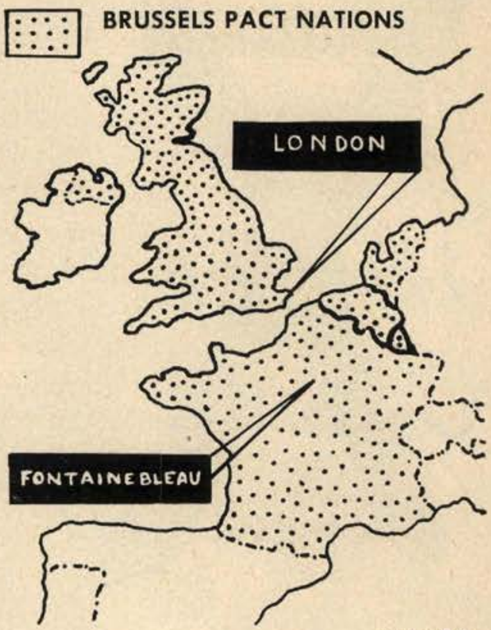
5. This proposal is truly one for the benefit of the United States. It is not a "hand-out." It is no cold-blooded hiring of mercenaries. It is an honorable exchange whereby both parties benefit—and therein, I think, lies its special strength.

6. Of overriding importance is the fact that there are millions of people the world over who look to the United States as the guardian of democracy. It is only right that the young and able-bodied men among these people should have the privilege of helping us carry the torch. For many reasons, they cannot put their armies into the field. But their young men can help as individual allies and should be enabled to do so. We have gone to great lengths and much trouble and expense in order to leave no stone unturned to have as many allies as possible in this troubled world. This is yet another way in which to secure more friends—this time an ally in the uniform of the United States Army.

★Colonel, Armored Cavalry Reserve.

UNIFORCE — One year ago the Foreign Ministers of Great Britain, France, Belgium, The Netherlands and Luxembourg met in Brussels to sign a fifty-year alliance known as Western Union. They created a defense organization and ordered the military chiefs to form a combined fighting force. This SHAEF-type coalition has been labelled "Uniforce." Under the chairmanship of Field Marshal Montgomery a combined forces framework has been drawn up, with ground (Uniterre), sea (Unimer), and air (Uniair) commanders designated. Chairman Montgomery's (Unilion) headquarters has a "forward" at the old cavalry barracks at Fontainebleau, 35 miles south of Paris, and a "rear" at Dover House, London.

As the Journal goes to press it seems probable that the North Atlantic Security Pact, of which the Brussels Pact is a forerunner, will be signed in April, adding Canada and the United States to the grouping of western powers. American military observers have been sitting with all sections of Uniforce since the beginning of the year. With our signing of the North Atlantic Pact, we will assume full and active participation in this alliance aimed at the maintenance of peace.



AC Jnl-Bell

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Field Marshal Montgomery
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"UNITERRE"

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General de Tassigny

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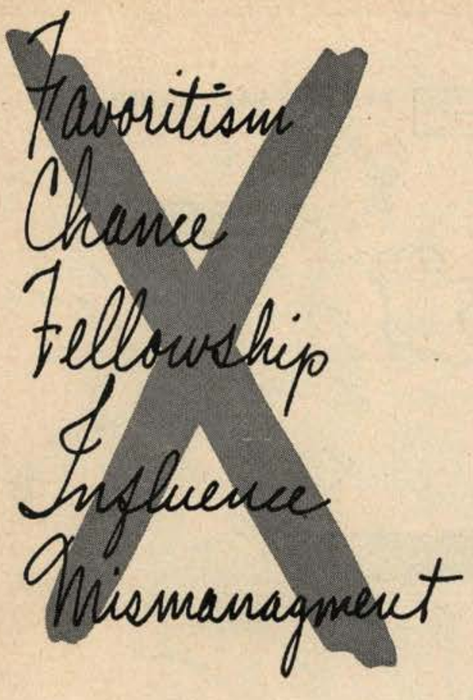
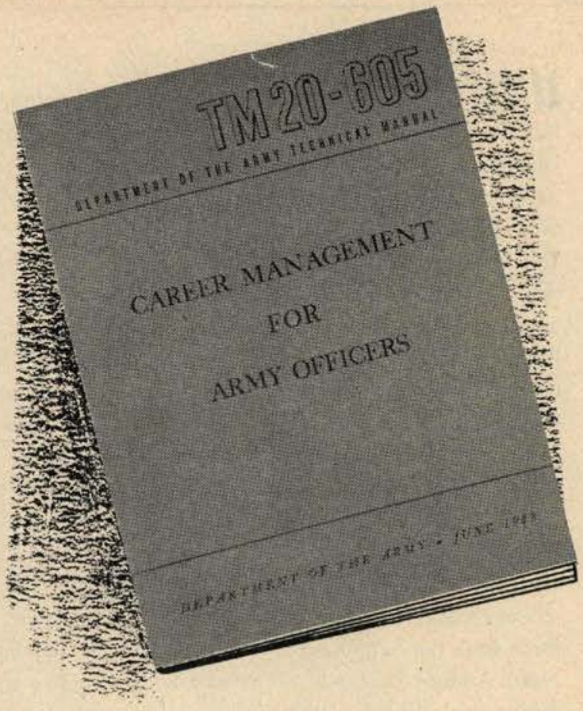
Vice Admiral Jaujard

"UNIAIR"

British

Air Chief Marshal Robb




TM20-605
DEPARTMENT OF THE ARMY TECHNICAL MANUAL
CAREER MANAGEMENT
FOR
ARMY OFFICERS
DEPARTMENT OF THE ARMY • JUNE

CAREER MANAGEMENT FOR OFFICERS★

by COLONEL J. C. FRY

CARD

"THOUGHTS are, like the stars, many reflections of a few originals."

If you have read Betty McDonald's mirth-provoking *The Egg and I,* you will recall that two amusingly indolent characters always blamed their troubles on "those crooks in Washington," where "the whole damn shebang" was operated by incompetents. Many officers who have observed or heard of unfair army personnel practices are prone to make similar remarks without contributing any particular effort toward corrective measures. For information of all such individuals the Director of Personnel and Administration has his staff busily engaged in an all-out effort to develop personnel policies and administrative procedures to insure that sensible Career Management will have a sound foundation of permanence and confidence.

It Will Take Time

The results of such work will not be evident for some time. Personnel problems cannot be treated as a fixed science. Every factor that makes up such an equation is either unknown or of variable weight. No answers can be expected that will solve every individual case. The best we can hope for are sensible policies and implementing procedures that will be as fair as human endeavor can plan for all concerned, and which will insure a suitable safety factor to guard the welfare of our Country.

It has always been the mission of our peacetime army to have the necessary force in readiness for any wartime emergency. Congress has never allowed a safe margin of numbers and it is, therefore, of vital importance that individual ability be recognized and suitable plans made to employ personnel wisely.

The thoughts expressed in this article represent the views of the author, and do not necessarily represent existing or contemplated Department of the Army policy.

The first authentic Army publicity* outlining contemplated improvement in personnel practices received world-wide favorable comment but some of the remarks have indicated a deplorable ignorance of just what influence this program can be expected to have on the future of our army or on the careers of individual officers. Letters received on the subject give the impression that the writers visualize a sort of coach and pupil program where one officer works and another monitors his career so that all can confidently expect to retire as General Officers. Unhappily for such dreams, the great white way with its myriad of stars can be trod during peacetime by only ¾ of 1% of our officers, even if all possessed qualifications to warrant such ultimate promotion.

Career Management

"Career Management" is the term employed to identify that portion of the Army's personnel program which is expressly designed to further the careers of Army personnel. It contemplates the coor-

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★A sequel to "Let the Best Man Win"—October 1946 issue, *Infantry Journal.*

*(Circular 142, 1947.)

What's the matter with Career Management? Can we overcome the negative factors? Can we expect the full cooperation of G-1's and S-1's; of organization and unit commanders; of the individual officer on the receiving end of an assignment? The guide, TM 20-605 is out! Here is a penetrating analysis of the plan—of past failures and future possibilities—of a program whose effective execution will provide the potential to meet the payoff.

dination and implementation of sound personnel policies developed with the aid and cooperation of all of the Arms and Services. Although the program will ultimately apply to all Army personnel my discussion refers only to officers.

The word "career" has been included in Army personnel plans with careful deliberation to alert officers to the fact that every order issued affects the life and welfare of some individual. The success of personnel plans depends not alone upon the wisdom of the planning, but also upon the cooperation of those who implement it and upon the insistence for fair play and continuity of the program by individual officers. Career planning by the Army does not, in any way, relieve an officer of the entire responsibility for the success of his career. It merely means that he will be afforded the opportunities to gain the experience and knowledge which are prerequisites to the attainment of a place among those officers who will ultimately be classified as qualified for high command or other positions of great responsibility.

In the past the Chiefs of Branches handled personnel according to their respective ideas. The result was continuing changes as the heads of branches retired. Every branch had different requirements and there was insufficient coordination to obtain even fair results. The failure to have coordinated policies and plans resulted in some unhappy personnel conditions, where many officers felt that assignments were made to please the whims of the Chiefs of Branches. Certainly some assignments were made to supply the need of post commanders who sought specialists to improve their own organizations and thus to indirectly contribute to the enhancement of their own official records. Without argument there were occasional personnel practices which favored the friends of cliques near the thrones and awarded undesirable assignments to the unknown or socially unimportant. Carefully cultivated friendships frequently paid substantial dividends in desirable and even profitable assignments. I suspect that there are lengthy "bull sessions" worth listening to in Valhalla where Patton, McNair, Rose, Gus Braun, Nick Craw, Darby and a multitude of other gallant souls band together to chide former Chiefs of Branches on their failures.

Colonel J. C. Fry is a graduate of the United States Military Academy, Class of 1922. During the recent war he commanded the 350th Infantry Regiment in the Italian Campaign from south of Rome deep into the Gothic Line in the North Apennines, moving on to the post of Assistant Division Commander of the 88th Infantry Division to the close of the war, and assuming command of the "Blue Devils" during their tour as Prisoner of War Command for the Mediterranean Theater, and their first phase of occupation in the Venezia-Giulia-Trieste area. Upon his return to the States in early 1946, Colonel Fry became Chief of the Infantry Branch. He is now a member of the General Staff, Personnel and Administration Division.

When we speak of an individual's career one's mind naturally turns to thoughts of emoluments and opportunities for advancement to positions of increased responsibility and prestige. Career Management plans touch but lightly on such matters. Those phases of an officer's career are automatically taken care of by Acts of Congress that determine pay and promotion. However, the plans do deal with such nebulous matters as the intent of the Department of the Army to maintain a highly competent Officer Corps, qualified to serve the nation well in event of a national emergency. Further, they seek to develop assignment patterns that will integrate the desires and qualifications of individual officers into the needs of the Army and our Country.

The basic purpose of this new personnel management plan is to offer officers broad opportunities for professional development through wise and practical rotation of assignments. In implementing the program, the Army contemplates the use of almost every type of duty for the purpose—schools, troops, and staff. A step necessary to the successful administration of the program is the development of personnel assignment patterns to fit the specific requirements of each Arm and Service. The Career Plan would eliminate repeated assignments to the same type of duty and substitute greater opportunity for deserving officers to experience practical staff and command duties. It contemplates a standard procedure of advancing responsibility where officers habitually serve as understudies or assistants before being given positions of primary responsibility. Further, the program would reduce to a minimum the influence of bias and favor on the careers of individuals and in the interest of welfare of the Army and our Country it seeks to broaden the horizons of opportunity for all officers.

The essence of the entire Career Program is the *wise rotation of assignments* designed to afford officers opportunities in proportion to their capacities for professional development. Each Arm and Service should develop assignment patterns to fit its special needs, the Department of the Army only exercising the degree of staff supervision and control required to insure the necessary coordination. The plans under study would give permanence to assignment policies that have long been acknowledged as right and proper. "In time of peace, prepare for war." Specifically, the objectives are:

> To develop the professional capacities of officers to the highest ability levels that can be achieved by intelligently planned and progressive rotation of assignments.
>
> To give to all officers on the basis of demonstrated merit equal opportunity for selection, promotion and preferential assignment.
>
> To insure that officers are classified according to their qualifications and that such qualifications are a matter of record.
>
> To develop an administrative plan that will be ready, in event of a national emergency, to insure the procurement and proper allocation of personnel in accordance with their qualifications and in proportion to the relative need for each task.

Need For Career Management

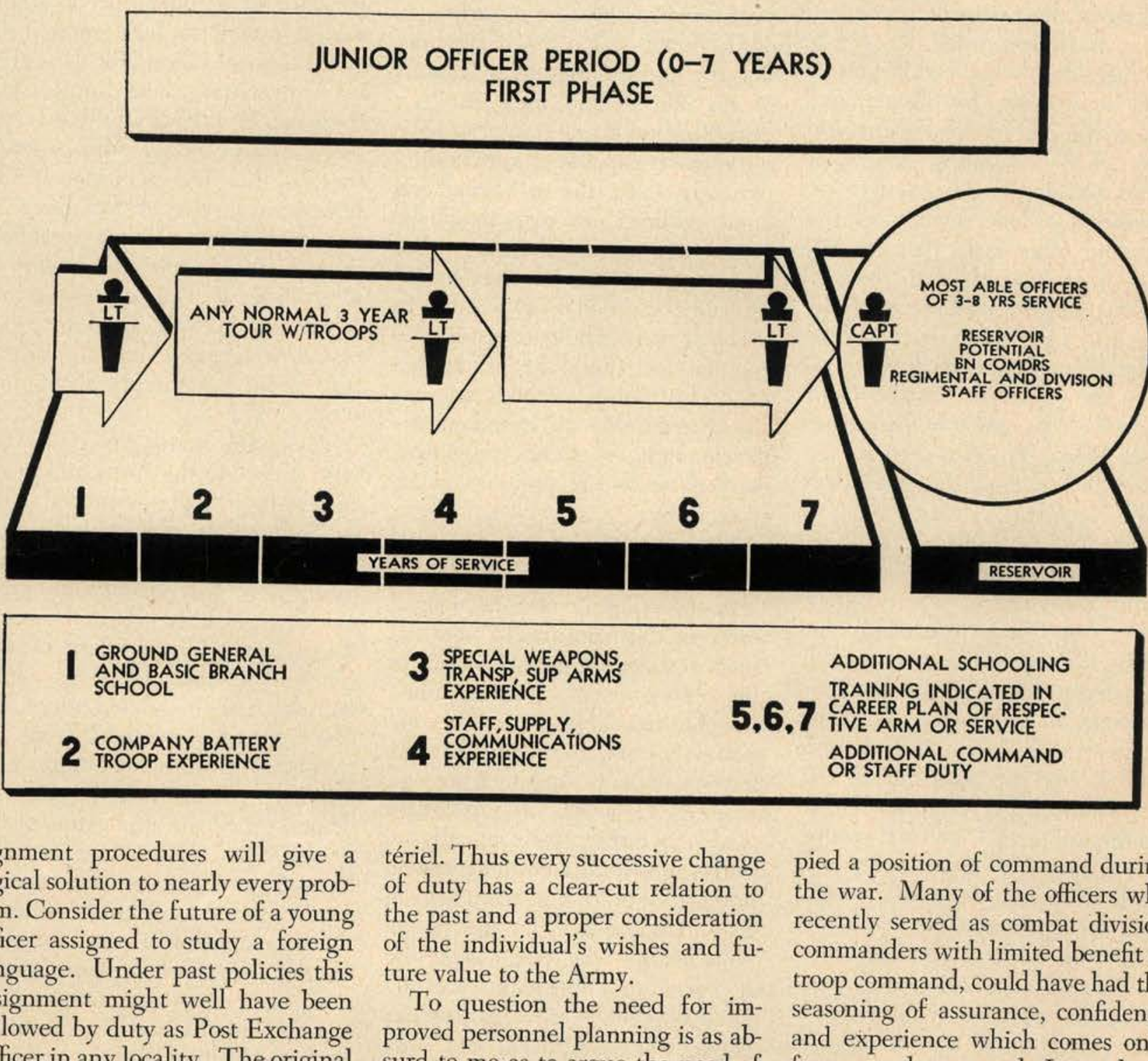
Does the Army need a Personnel Management Program—*i.e.*, Career Management? This natural query can best be answered by other questions. Is it desirable to employ personnel in accordance with the needs of the Army? Should we endeavor to fit the special aptitudes of individuals as accurately as possible to the duties they will be expected to perform? Is it preferable to make personnel assignments by careful analysis of individual qualifications or should we evade this task and leave matters of such importance to chance, to the initiative of the individual concerned, to the urgency of requirements or perhaps to the sponsorship of seniors? Surely no one can study past personnel practices or contemplate our future problems without inner conviction of our great need for scientific planning. There have been many examples where individuals have progressed, failed or have been forgotten because of the lack of necessary controls. Chance took care of some. Initiative, personality and force of the individual took care of others and the sponsorship of seniors took care of many. Such a program gives little assurance that the individual of ability will receive recognition in accordance with his qualifications nor does it fit into our democratic way of living.

Any attempt to improve personnel planning within the Department of the Army has frequently met with a negative reception from the senior officers on whose shoulders will fall the task of implementing the policies of the Director of Personnel and Administration. The impetus now being given to personnel planning is what is needed—a fresh start based on original thought. There is scarcely any limit to what can be accomplished if our leaders understand and translate their approval into active supervision. Not long ago I listened to a long criticism of personnel policies by a very senior officer. The remarks ended with the comment, "It is a damn shame. Someone should do something about it!" What? When? Who? These were problems left to the initiative of others. On another occasion a senior General Officer made a broad statement that ended in a typical generality. "There is no need for elaborate plans. If G-1 wants career guidance it can easily be accomplished—we have command channels for such purposes."

The history of past accomplishments fails to support such an optimistic attitude. I prefer to think that there are definite reasons why attempts of this nature have failed rather than to make a blanket indictment of all former Army G-1's. There were administrative ills that no one ever succeeded in curing. We must determine what sabotaged past attempts and avoid those dangers as we would a plague. I believe that the answer could be diagnosed as a lack of coordination between the many branches of the Army. Every G-1 has had the background of some Arm or Service. It is only natural that their thoughts should have been molded by their basic training. The final solution—if it is to survive—must fit the needs of all Arms and Services.

Without definite plans to control assignments no progressive professional development can occur except by chance. The pattern of past practices indicates that no system of assignments guides was ever established or followed. If there was any plan to fit officers' qualifications to the needs of the Army it must have been scrapped at the beginning of the war. On this theme almost any older officer can recite dozens of cases of mismanagement. General Wedemeyer attended the German War College and there were probably few of our senior officers who had an equivalent opportunity for acquaintance with Europe. His wartime assignment was in the Orient. General Max Taylor was a Japanese language student and hence must have possessed more than average knowledge of that part of the world. He commanded the 101st Airborne Division in Europe. I was one of the small number of officers who helped create the original Philippine Army and am intimately acquainted with much of the terrain where our troops destroyed the Japanese forces. I fought with the 88th Division in Italy. Colonel Joe Cleland is perhaps the only officer of the United States Army ever to drive a car across

Turkey, Syria, Iraq, Persia, and Afghanistan. At a time when our Army desperately needed representation in the Middle East he was placed on attaché duty in South America. And so on, ad infinitum.


JUNIOR OFFICER PERIOD (0–7 YEARS)
FIRST PHASE
LT
ANY NORMAL 3 YEAR TOUR W/TROOPS
LT
LT
CAPT
MOST ABLE OFFICERS OF 3-8 YRS SERVICE
RESERVOIR POTENTIAL BN COMDRS REGIMENTAL AND DIVISION STAFF OFFICERS
1
2
3
4
5
6
7
YEARS OF SERVICE
RESERVOIR
1 GROUND GENERAL AND BASIC BRANCH SCHOOL
2 COMPANY BATTERY TROOP EXPERIENCE
3 SPECIAL WEAPONS, TRANSP, SUP ARMS EXPERIENCE
4 STAFF, SUPPLY, COMMUNICATIONS EXPERIENCE
5,6,7 ADDITIONAL SCHOOLING
TRAINING INDICATED IN CAREER PLAN OF RESPECTIVE ARM OR SERVICE
ADDITIONAL COMMAND OR STAFF DUTY

No personnal management plan can be developed that will be able to furnish answers for all the questions that will confront officers detailed to develop sensible career patterns. However, thoughtful assignment procedures will give a logical solution to nearly every problem. Consider the future of a young officer assigned to study a foreign language. Under past policies this assignment might well have been followed by duty as Post Exchange Officer in any locality. The original selection of students for assignments of this nature should be made from volunteers who seek to follow definite career patterns. Common sense would seem to indicate that such study should be followed with a tour of duty in the country of the officer's interest. A logical assignment might be as an Assistant Military Attaché. Following such a detail the next step would be to convey the knowledge of the country and the experience gained to the Department of the Army by service with our Intelligence Division. Following this the officer should be given an assignment with troops to improve his knowledge of the combat method we would employ, of our resources and the progress made in the development of military matériel. Thus every successive change of duty has a clear-cut relation to the past and a proper consideration of the individual's wishes and future value to the Army.

To question the need for improved personnel planning is as absurd to me as to argue the need of keeping abreast of tactical doctrines or the improvement in military weapons. Those officers who approach such matters with indifference or who are willing to drift into procedures followed by their prewar predecessors are out of step with the times. In my opinion they are truly "old fogies." In terms of our younger officers they are the ones frequently described as being dead but who have not, as yet, been transported to the cemetery.

In retrospect it seems absurd beyond words that the fine regiments in existence before the war were not used to capacity to train potential combat leaders. I am undoubtedly an exception, but of all the Regimental Commanders under whom I served before 1940 not one occupied a position of command during the war. Many of the officers who recently served as combat division commanders with limited benefit of troop command, could have had the seasoning of assurance, confidence and experience which comes only from actual command. Let us hope that we shall never again waste such golden opportunities. During a national emergency our interest is in the man who can produce results. Diplomas have very little tangible value. *Why should so much thought be given to the theoretical training in schools and the opportunities for practical training* *be almost totally neglected?*

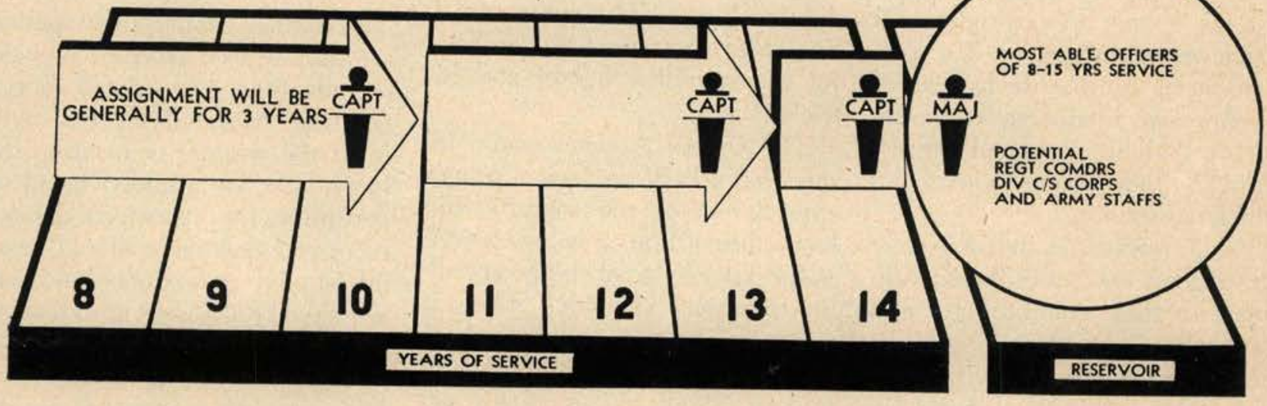
Every older officer can recall commands that were used for the personal glorification of the commander. The emphasis on unit efficiency and the almost complete indifference to the desires of individuals to be allowed to perform duties that would help their professional development; the wasted hours devoted to painting transportation for horse shows; the seasonal whitewash beautification of rocks and trees; the reams of paper and hours of clerical work devoted to securing unauthorized white crossed belts and spats for Regimental bands; the officers who spent year after year performing the same duties, running Post Exchanges, supervising athletic teams; and a thousand other tasks that contributed little toward their over-all qualifications! I was personally involved in a project to dye all of the mules of one Regiment. I was never given the confidence of the Commander but presumably the famous Black Horse Troop was to be surpassed by a more famous Black Mule Regiment. Every branch of the service had similar experiences. Professional Adjutants were to be found everywhere. Many knew little except their regulations and during the test of war were quickly relegated to inconspicuous and unimportant roles. Every type of work had its specialists who could do little else. A large percentage of the officers who failed ignominiously during the war came from such groups. War is the pay-off and it is then that the leader needs the confidence of practical experience. As I seek concise arguments to emphasize the importance of such assignment control, I am reminded of the remarks on the record of a brilliant officer who was relieved in combat. "Through no fault of his own General ...... has never served with troops since he was a company officer. He has been unable to adjust himself in the conditions of modern combat." I have no way of knowing whether or not the comment was warranted but anyone who has commanded troops in battle can appreciate the possibility of an officer failing for just such reasons. *In cold terms of truth many men died because we did not use to capacity all of our means of practical training.*

We must destroy the idea that peacetime commands have a single goal, which is unit efficiency. Few organizations will ever enter combat with any considerable part of the personnel who fill its ranks during peace. The real job of the peacetime commander must be recognized. His task is that of developing the professional qualifications of his officers and men and not beautification of the post or to have a command capable of functioning perfectly with the personnel on hand. Officers and men should be given an opportunity during peace to prepare for the job they would probably be called on to perform in event of war. The true test of any commander should be his knowledge of training methods and his ability to develop and round out the development of those individuals marked for future positions of responsibility.

The principle enunciated in the previous paragraph has already met stern opposition by officers engaged solely in the planning of training. Such opposition merely indicates the difficulty of putting one's thoughts into understandable composition. I am confident that the personnel plans which I am attempting to outline in this article would produce results equally as good as those desired by officers who prefer to emphasize the unit instead of the individual. To the proponents of unit efficiency I make the suggestion that they study carefully the history of those organizations which were destroyed, but rose again to fight in battle because the surviving leaders were prepared by practical experience to train new organizations. The units officered by individuals possessing a sound foundation of practical experience can be expected to perform with greater brilliance than one serviced by officer specialists who have never had an opportunity to prepare themselves for the problems that they inevitably encounter outside their own narrow fields. Remember, there are poor leaders but there are no poor regiments. In our prewar establishment many officers served a dozen years with troops while others had little or no opportunity for troop experience. At least one officer who reached Major General rank had never commanded a unit larger than a platoon, and the experience of a multitude of others was restricted to little more. All credit to those officers for their ability to overcome these hurdles but there can be little doubt that fewer white crosses would now be overseas or that less criticism would have been leveled at the "brass" if our peacetime military establishment had been used to capacity to give officers a better understanding of the qualifications and limitations of individuals as well as a clear picture of the potentiality of our matériel.

Personnel management—as the term is used in the Army and in Industry—indicates an improved status for individuals. Like all advancements of this nature that have been made throughout history, the gradual changes have resulted from a direct need. The student of war can find a thousand books which will describe the advancement and development of weapons from the crossbow to the atom bomb. Our military schools have taught and demonstrated the application of the Principles of War. Our research has sought with what funds were available to surpass our enemies in the development of potential combat tools. In our war plans the natural resources of our country have received suitable study. The transportation facilities and the problems of logistics are subjects that have always received appropriate consideration from our General Staff. In short, of all the elements that must be coordinated in the successful prosecution of war, the most important ingredient—the individual soldier and officer—has received the least attention. The professional development of the individual was left more to chance than to the application of logical management. World War II took us almost to the bottom of the personnel barrel before our enemies were defeated. *The possible war of the future could bring defeat to our country* unless our personnel plans are such that the full potential of this most important resource can be realized.

COMMAND AND STAFF PERIOD (8–14 YEARS)
SECOND PHASE


ASSIGNMENT WILL BE GENERALLY FOR 3 YEARS
CAPT
CAPT
CAPT
MAJ
MOST ABLE OFFICERS OF 8-15 YRS SERVICE
POTENTIAL REGT COMDRS DIV C/S CORPS AND ARMY STAFFS
8
9
10
11
12
13
14
YEARS OF SERVICE
RESERVOIR

8—14 - - - - - ADDITIONAL SCHOOLING. ROTC, ORC, NG ASSIGNMENTS. INSTRUCTOR DUTY IN SERVICE AND CIVILIAN SCHOOLS. ADDITIONAL PRACTICAL EXPERIENCE W/TROOPS. ADVANCED STAFF. EXTREME WEATHER TRAINING. WEAPONS, MATERIEL, TRANSPORTATION, AIR TRANSPORT, AMPHIBIOUS.

Civil Life Parallel

If we pause to compare our personnel plans with those of civilian industry, we find some interesting parallels and some obvious reasons why military personnel planning has frequently been out of step with that in civilian life. Industrial organizations are owned by individuals or groups of individuals and these persons naturally move to the top positions of responsibility and remuneration. Here we have the sponsorship of individuals which is certain to always flourish in many walks of life. However, in spite of this there has been throughout the years, continued improvement in democratic personnel practices that warrants thoughtful study.

The steady improvement and advancement made by industry has been due to the combined desires of the individual to improve their lot and to the needs of management to find efficient production methods. Individual workers grew tired of systems where power was left in the hands of minor bosses who frequently depended upon their brawn to enforce discipline and whose family, relatives, and friends occupied the most desirable positions. (Not unlike some personnel arrangements that have at times existed in the Army.) Labor movements throughout the country have steadily insisted upon increased consideration of individuals on the basis of ability and the result has been consistent advancement toward the wise utilization of personnel. To meet the demands of labor and in accordance with the democratic habits of our country, industrial leaders have recognized the wisdom of employing personnel according to their capabilities. The assembly lines which reached full development in our automobile industry proved that it was a matter of efficiency and increased financial dividends to utilize men on jobs for which they are best suited and to train, guide, and employ individuals according to their special aptitudes. The result has been consistent improvement of personnel management methods throughout industry. Sensible administrative procedures have succeeded in gearing the desire and qualifications of employees to the needs of commercial organizations. This is exactly what the Department of the Army seeks to do through its plan of career management.

If we investigate further the methods employed by civilian industry we discover that the importance given to personnel management is in direct proportion to the size and efficiency of an organization. Examples would include Vice

Presidents in charge of personnel who are responsible only to the President of the organization. (Such administrative methods parallel the Army organization where the Director of Personnel is responsible to the Chief of Staff.) Civilian personnel managers must know the needs of their organization, and the qualifications required of employees, and are responsible for the recruitment and individual training of personnel which they furnish the using agencies. In this respect our military administrative organization differs from the civilian counterpart in that it divides its responsibility for personnel. Training of every degree is made the responsibility of another Division of the General Staff. To my way of thinking this is a weak spot in our personnel management program. My personal views are that we have need of improved administrative procedures to allow personnel officers greater latitude in matters involving individual training.

While workers in industry were insisting on pay scales commensurate with their qualifications, and employers were endeavoring to get the greatest return for their investment, army personnel planning lay dormant due to lack of incentive. With pay and promotion beyond the influence of individual efficiency and with no immediate emergency to interfere the Army drifted complacently through the prewar years. The war brought the defects of our personnel planning into the glare of public opinion. Unjust criticism made the headlines of our newspapers more often than the practices which needed correction. From certain wartime mistakes it was easy to deduce that the Army needed to follow the lead of civilian industry. The first change initiated subsequent to the war was a promotion plan designed to recognize individual merit by selective promotion. The next step should logically be the implementation of personnel policies to insure that the Army takes full advantage of the inherent qualifications of our personnel.

The Cutting Edge

As we pursue our routine and frequently prosaic peace duties we all too often forget the purpose of all personnel management. During war our fighting force is a very thin blade supported and driven home by the weight of industry and our human resources. The decisive and final struggle on land has always been decided by the ground combat forces. The black lines on operations maps merely measure the progress of our fighting men along the road to victory. On the ground there is nothing in front of the soldier except the enemy. These are the men in the forward areas whose battles are won with brains and fighting hearts. The most compelling need in every war has been for the front-line fighter and his leader.*

The Career Program would insure that all officers have a proper appreciation of the capacity and limitations of human beings as well as full knowledge of the potentialities of available matériel. There is no type of human endeavor where it is so important that the leader understand all phases of his job as that of the profession of arms. Everything concerning a soldier's existence: his ability, potentiality, and professional knowledge, as well as those matters which influence his personal welfare; his food, clothing, comfort, promotion, and in time of war his very life, depends upon his commander's knowledge and appreciation of the importance of all phases of his work. The planned professional development of our future leaders merely represents insurance that our troops are ably led in event of any future war.

There will be a continuing need throughout the years of peace to screen and select the leaders who will guide our armed forces in event of war. No officer of ground combat arms should ever be promoted to the rank of colonel or higher who has not demonstrated the ability to command troops. If such a policy was emphasized in our Career Planning a desirable number of our ablest officers would seek command responsibility. This is surely desirable. The Army exists to destroy the combat forces of our enemy and it seems as absurd to promote an officer to general officer rank who has never commanded troops, as to elevate a naval officer to flag rank who has never been to sea. Such matters should not be left to chance or to the conditions of near hysteria which might prevail if our country were attacked by a foreign foe.

How Does Career Management Affect You?

Personnel Management policies are usually well received provided the planning is restricted to generalities. Most officers will agree upon the wisdom of insuring that individuals are afforded broad opportunities for professional development and that there should be administrative procedures to record individual qualifications so that officers may be employed profitably and effectively in the event of war. However, plans cannot possibly provide assignments that will please everyone. The question that inevitably bobs to the surface of any officer's mind who considers the subject is, "how does this affect me?" Individual desires for personal and preferential treatment will always be a problem requiring moral courage on the part of personnel officers. The reactions of many officers will be that it is all very well to have "fixed" policies providing an exception can be made in their case. Of course officers should take their turn at undesirable assignments. Sure—it's a good thing for all officers to serve a detail with civilian components, it is bound to give an officer a better understanding of those who inevitably bear the brunt of any war. But when it comes time for such details there are plenty who want to be excused. They prefer to stay within the personnel groupings where their qualifications are known to the officers who can influence their future. Such officers will reluctantly relinquish their program for advancement through sponsorship of the seniors with whom they are acquainted and their private plans to ingratiate themselves with others in high places.

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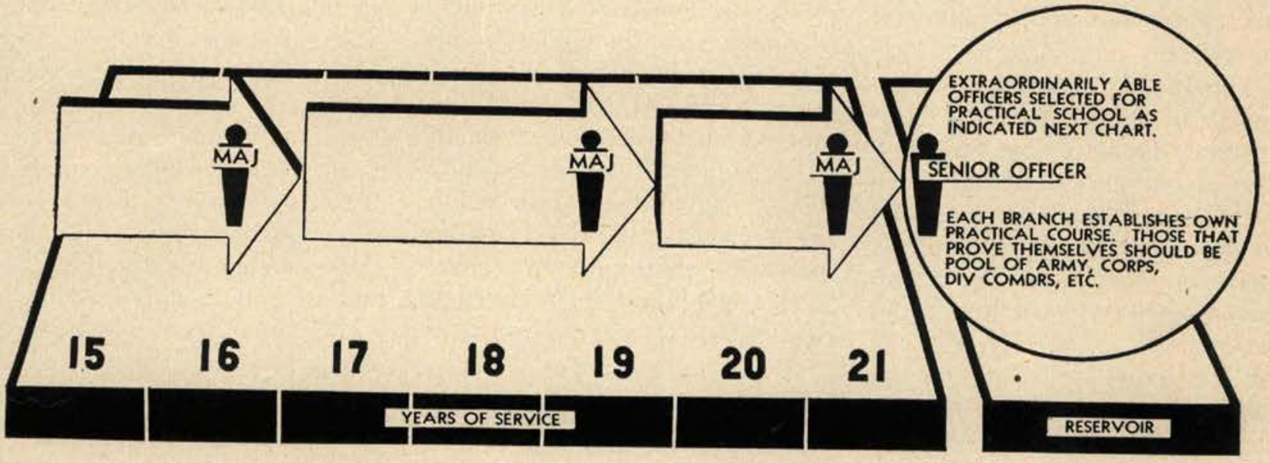
*This thought is emphasized in a wartime statement by Lt. Gen. Lesley J. McNair (killed in action).

FIELD GRADE (15–21 YEARS)
THIRD PHASE


EXTRAORDINARILY ABLE OFFICERS SELECTED FOR PRACTICAL SCHOOL AS INDICATED NEXT CHART.
MAJ
MAJ
MAJ
SENIOR OFFICER
EACH BRANCH ESTABLISHES OWN PRACTICAL COURSE. THOSE THAT PROVE THEMSELVES SHOULD BE POOL OF ARMY, CORPS, DIV COMDRS, ETC.
15
16
17
18
19
20
21
YEARS OF SERVICE
RESERVOIR

15—21____ ADDITIONAL SCHOOLING. NWC-ICAF-AFSC. INSTRUCTOR DUTY. CIVILIAN COMPONENT DUTY. ADVANCED STAFF AND COMMAND. (A CERTAIN DEGREE OF SPECIALIZATION BASED ON PREVIOUS SERVICE VERY LIKELY IN THIS PERIOD.)

The successful implementation of any new personnel policy depends upon understanding by those who have to execute the plan. Career Management must be implemented by directives that require officers of all echelons to support and improve by intelligence and imagination the assignment patterns outlined. To prove successful the following administrative steps are needed:

a. Career Management must be made a command responsibility under the appropriate Army Regulation governing assignment procedures.

b. Personnel officers must follow the personnel policies outlined in TM 20-605, Career Management for Officers.

c. The Career Management Program must be a continuous subject for inspection by The Inspector General. This will afford field commanders an opportunity to make pertinent recommendations for the improvement of assignment policies and will acquaint the Director of Personnel and Administration with the problems of field commanders and progress being made in personnel management.

A suitable text has already been published. It is not expected that the first Manual on the subject will prove to be a masterpiece but it should put the career program on a sound foundation of reality. There will be ample future opportunities for revision and improvement of the plans outlined. The basic concepts, as outlined many times in preceding pages, have been followed closely. Every personnel section of every branch of the Army has participated in the preparation of the Career Patterns that are included as assignment guides.

In the first phase outlined in these assignment patterns the young officer is taught the basic principles of his branch and then allowed to apply theory in practical work. This is an internship which is the foundation upon which his future will be built. During this period he acquires the knowledge of the tools with which he is to work and upon which his success or failure depends. The information gleaned will determine his future actions as he serves in positions of greater responsibility. This is the time for the young officer to learn how much an individual can endure; the strength and the weaknesses of the individual soldier. It is also the time to learn the potential that exists in our matériel, the real reason for the existence of any Army, and what must always be the inevitable price of victory.

In the second phase officers establish their aptitude for certain specialized assignments by actual performance of duty. They receive additional schooling, assignments with Civilian Components of the Army, and additional practical experience with troops, advanced staff duties and special operations.

The third phase of an officer's career is determined chiefly by his interest and background, but subject to the limitations of position vacancies. Through planned consecutive assignments, on-the-job training, special school courses and tours of temporary duty with allied industries, many can be given opportunities to be developed as specialists in selected fields. The specialist classification cannot, however, be absolutely rigid since any officer at any time should be equipped generally to perform any task appropriate to his rank and experience.

The last phase is especially designed to maintain the highest standards desired for unit training. The ablest officers are tested in qualifications of troop command and selected officers are given a final opportunity to check their knowledge of the possibilities of our matériel.

Career monitoring of assignments will cease for most officers on completion of 21 years of service. Top level military schools will be completed and most officers will serve their final peacetime assignment period with troops. Most important will be the indexing of these field officers for emergency assignments.

Beyond the career monitoring period some few selected officers could be given important positions of primary responsibility. These will be the officers who are the potential leaders of any immediate emergency. This should be a final screening and testing period for potential high commanders.

The Career Manual as conceived should be the constant reference and guide for assignment officers of all levels. It should bring to an end the activity of bookkeepers who have long masqueraded as personnel officers. Instead of filling vacancies with men who were already proficient in the task to which assigned, these officers would be forced to use imagination and intelligence to develop personnel by affording opportunities for officers to learn new duties. It will give to S-1's and G-1's greater responsibilities and if the written word is supported by force and imagination, the results are certain to greatly improve the professional stature of our entire officer corps.

The assignment pattern covered in the Career Manual is broad.* There are 11 years of controlled assignments during the first 21 years of service. These include the Basic Officers' Course, the Advanced Officers' Course, 6 years of troop duty and 3 years' service with civilian components. As such assignments are supplemented by other duties that must be performed by the officer corps, individual qualifications should become evident. In the personnel sections the records should be the subject of continuous study to make certain that proper weighing is given to the desires of the individual officer, and that demonstrated qualifications are fitted to the needs of the service.

To Make It Work

So it is a fine idea! But how do we make it work? There is no doubt in my mind as to the compelling need for military personnel management. If the imagination, initiative and ingenuity of our military seniors can be guided along the lines I have indicated we will have overflowing reservoirs of capable officers to supply the necessary leadership in event of another emergency. The immediate problem is to secure the desired understanding and appreciation by those who have for years given first priority to Plans and Operations and secondary considerations to Personnel. The implementing directives, which launch Career Management, will have to be clear, concise and forceful and such that will fit into our schemes for National Defense. The publication of the necessary regulations and manuals is a mission worthy of the ablest writers.

It is imperative that the importance of personnel planning be emphasized by continuous repetition. Our officers are accustomed to training directives. If a General Officer is assigned to the command of a division, he is immediately concerned with the efficiency of the unit. He can be expected to follow with intelligence and imagination the instructions outlined in training Manuals and to exercise the ingenuity required to get the desired results. To get the same commander to adopt personnel policies that need to be correlated with training methods will require more than normal emphasis at the outset. To repeat myself, the mission of developing the professional capacities of the individual members of a command must be a command responsibility, just as the efficiency of units is now an accepted training requirement. Once commanders on all levels appreciate how important sound personnel management is to the success of our peacetime mission, there is no doubt of the cooperation or degree of loyalty that will support the program. It will be a great day for the Army when commanders sum up their annual accomplishments in terms of leaders they have developed instead of exuding inward satisfaction over silly minor accomplishments such as winning some local rifle contest or transportation show.

The planned development of military personnel will prove equally as interesting as tactics or strategy. However, the initial success of the career program can be unjustifiably delayed by lack of appreciation of the problems involved. Every school has a limit to its capacity. There must be teachers as well as students and this fact is occasionally forgotten by the new enthusiast outlining "on-the-job" training. Every T/O position cannot be filled by a neophyte. A student may become a teacher but his efficiency will depend upon how well he has learned his subject. In short, a successful career management program must insure progressive advancement through each phase of training. There is nothing particularly new about such a scheme. The plan I have attempted to indicate merely contemplates suitable control of assignments to insure that they are made solely on the basis of capacity and the need for knowledge or practical experience.

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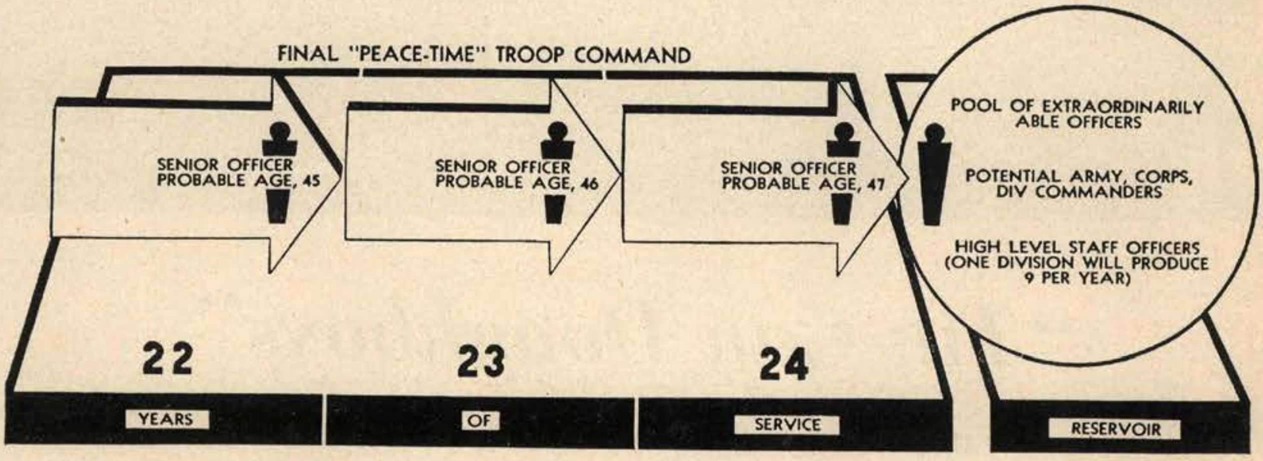
*For the Cavalry assignment pattern see the article "Stairway to the Stars" in the July-August 1948 issue of the ARMORED CAVALRY JOURNAL.

WAR LEADERS
(COMBAT ARMS POSSIBILITY)


FINAL "PEACE-TIME" TROOP COMMAND
SENIOR OFFICER PROBABLE AGE, 45
SENIOR OFFICER PROBABLE AGE, 46
SENIOR OFFICER PROBABLE AGE, 47
POOL OF EXTRAORDINARILY ABLE OFFICERS
POTENTIAL ARMY, CORPS, DIV COMMANDERS
HIGH LEVEL STAFF OFFICERS (ONE DIVISION WILL PRODUCE 9 PER YEAR)
22
23
24
YEARS
OF
SERVICE
RESERVOIR

22 BATTALION COMMANDERS
23 REGIMENTAL EXECUTIVES—DIVISION STAFF
24 REGIMENTAL COMMANDERS—DIVISION CHIEF OF STAFF—ARMY STAFF

NOTE: PROBABLE AVERAGE OF 23 YEARS SERVICE—ONLY THE OUTSTANDINGLY ABLE OFFICERS WOULD RECEIVE SUCH ASSIGNMENTS.

To use a nauseating phrase that grew out of the war, the final hurdle will be "the Top Brass." The successful application of plans that are at present little more than dreams will depend upon understanding and the energetic support of our military leaders on all levels. The maximum opportunities should be created during peace so that broad military knowledge may be absorbed by all potential leaders. However, this fact has frequently been forgotten and many commanders have wasted precious time developing to a high level of efficiency a puny peacetime war machine, with little thought as to how it must be altered to fit the needs of war.

If sound personnel management is to span the abyss of indifference that has grown throughout the years, and is to be something more than a dream, the implementation of personnel management must be supervised. Time is the essence of war and we cannot afford to allow indifference to interfere with our plans. Our most critical shortage will always be individual leadership and our most important peacetime mission is the development of those qualities in our Officer Corps. "That which is not inspected will not be respected." Field execution of Career Management directives should be a continuing subject for inspection and report by representatives of all higher headquarters.

Every commander must be trained to look beneath the veneer of any organization and to evaluate the degree of actual accomplishment. If a commander refuses or is incapable of recognizing personnel development methods; if everything "must click" at all times; then it is a foregone conclusion that subordinates whose future depends upon their superiors being pleased will take steps to satisfy the individuals concerned—at the expense of their junior officers who should have an opportunity to learn their trade. Let our top commanders establish the proper patterns by requiring a flow of officers through the many positions in their own headquarters and then requiring subordinate commanders to do likewise. Let all inspections be conducted with suitable emphasis on the opportunities afforded individuals for broad professional training and in a manner to kill the aspirations of those who would prefer to depend on eyewash. Water rises no higher than its source. The success or failure of any project will always depend upon the Boss.

Keep us informed of your change of address.

"Tin Can Doughboys"

CARDED

by LIEUTENANT COLONEL MORGAN G. ROSEBOROUGH

IN 1940, when the first two armored divisions were activated, the "tin can doughboy"—at that time still referred to as infantry (armored)—was outnumbered about three to one by the tankers. Today the odds have been about equalled, with four battalions of armored infantry and four battalions of tanks (three medium, one heavy) in our armored division. This trend is not a surprising one to those who spent much time with our earlier armored divisions. There was always the hue and cry for more infantry, and various means were devised for providing it. Our wartime experience further justified this trend and resulted in our present organization. It is not our purpose, however, to pursue this issue, but rather to present some ideas on the employment of this arm within our present division team.

Composition of Teams

The four armored infantry battalions in our present armored division are identically organized with a headquarters, headquarters and service company and four rifle companies. The rifle companies provide the combat striking power, while within the headquarters, headquarters and service company we find the means available for command, logistical support, fire support, and security and reconnaissance. (See chart.) However, it is a rare case indeed when we find this battalion fighting with only those elements provided organically. It is an accepted principle, in organization for combat, that combined arms teams of tanks and infantry will be formed by attaching companies of tanks to the armored infantry battalion and companies of armored infantry to the tank battalion. This attachment will not be on a straight trade one-for-one basis, but will be done in such a way that the resulting battalion team or reinforced battalion will contain the proportion of tanks and armored infantry that is desired for the mission to be assigned. Thus, in a situation favorable for tank employment, a tank battalion might retain all four of its tank companies and have attached one or more companies of armored infantry. In a case where a reinforced battalion heavy in armored infantry is indicated, the armored infantry battalion might retain all four of its rifle companies and have one or more tank companies attached. In forming these reinforced battalions the mission, terrain, and enemy situation are naturally the determining factors; however, we believe that we should also be guided by two principles: first, there should nearly always be some tanks with the armored infantry and some armored infantry with the tanks; and secondly, battalions should be retained as independent commands and not attached to one another. Guided by the above, the combat command

Armored Cavalry, as the Field Forces Team, embraces all of the arms and services. The proportions of infantry in the armored team and armor in the infantry team have increased in keeping with advances in modern warfare which are gradually switching the doughboy from a predominantly foot to an increasingly mounted role. Here's the story of how the highly important Infantry segment fits into the line-up.

commander will form the reinforced battalions he desires from the battalions of tanks and armored infantry that he has available.

In a similar manner, reinforced companies will be formed within the reinforced battalions by the attachment of tank companies or platoons to armored infantry companies, and vice versa. The result is a series of combined arms teams from the level of the platoon up. Thus, the tank and armored infantry battalions lose much of their identity as such; each tends to become merely one of the major teams available within the division to carry the fight to the enemy. It is then obvious that both tankers and armored infantrymen at every level must be thoroughly conversant with each other, and that through combined training they must develop the cooperation and coordination that will be necessary to insure their successful employment in this combined role.

The Tools for the Job

Aware now that the subject of this discussion more nearly approaches being one of the major fighting teams than it does being an armored infantry battalion, let us examine some of the tools that enable it to perform in this role. It is equipped with the normal infantry weapons that you would expect: rifles, carbines, automatic rifles, submachine guns, light and heavy .30-caliber machine guns, 60mm and 81mm mortars, .50-caliber machine guns, and rocket launchers. To provide mobility it is equipped with an armored personnel carrier for each squad. This is an armored vehicle with a full-track suspension that provides mobility comparable to that of the tank, enabling the carrier to traverse the same terrain and to overcome the same obstacles as the tanks it accompanies. Another outstanding characteristic of this vehicle is that it provides light armor protection all around and overhead. This armor, thick enough to protect against small-arms fire and shell fragments, enables the armored infantry to accompany the tanks through small-arms and artillery fire.

Means of Control

Naturally this fire power and mobility must be controlled. For that control the armored infantry battalion is provided with two communication systems—one mounted, the other dismounted. While mounted, the armored infantry units communicate with the tanks and with each other by means of the SCR-509-510-508-528 series of radios. These radios are common to both tanks and armored infantry; within the armored infantry battalion, they are present in almost every vehicle, including those at the squad level. Ample means of communication are thus insured while the infantry are mounted in their armored personnel carriers. Dismounted, the armored infantry may use the SCR-509, -300 or -536, or any combination of these, for communication. The SCR-509, available from the battalion down through the squad, nets with the tanks (SCR-510, -508, and -528) but is a little too heavy and unwieldy for continued use dismounted. The SCR-300 (available in battalion and company headquarters) nets with the AN/VRC-3 that is found in every tank. It is much more transportable than the SCR-509 and will normally be used for dismounted communication within the armored infantry battalion and with attached tanks. The SCR-536, currently the ultimate in transportability, is provided for communication within the rifle companies and platoons and within the mortar platoons. It does not net with any radios found in the tanks, and is limited in range. These established channels of communication are naturally augmented by special communication means arranged for a particular operation, and by the use of liaison personnel. In addition, all means are supplemented by the personal contact and personal liaison that are maintained by commanders at all levels.

U. S. Army

Lieutenant Colonel Morgan G. Roseborough was graduated from the University of Mississippi in 1939 and was commissioned in the Regular Army on 1 September 1939.

He served with armored infantry units in the Second and Eighth Armored Divisions from 1940 to 1945. Following the end of the war in Europe he served in various staff assignments in the European Theater from 1945 to 1947.

He has served as an instructor at The Armored School, Fort Knox, Kentucky, since December, 1947.

A TEAM FEATURE

Capabilities

So we have the armored infantry battalion, a unit possessing fire power, armor-protected mobility, and an adequate and flexible communications system. Let us now examine it in relation to the tank units with which it is to work so closely. What is it that enables these two arms to form a balanced team? What can one do better than the other, and why is it desirable to team the two together?

To begin with, the tank possesses heavier fire power, more armor protection, and greater shock action than does the armored infantry. Because of these advantages, the tank is better suited to carry the fight to the enemy when conditions are favorable for its

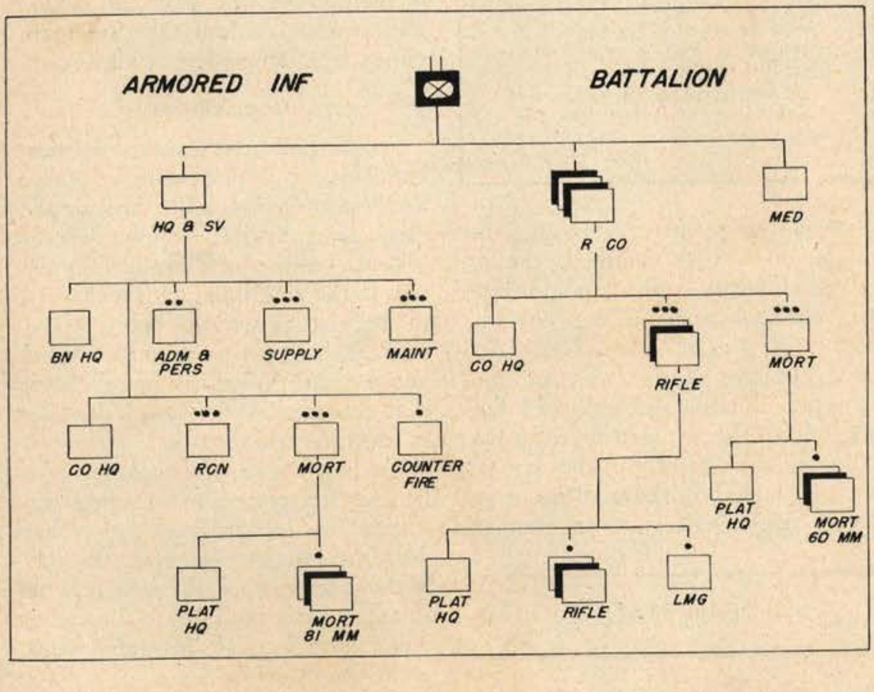
U. S. Army

For the doughboy riding beats walking, but the topside of a tank offered little protection in the late war.

use. When, then, is it not self-sufficient? First, it is highly sensitive to terrain. Once its mobility is lost it is no longer a potent weapon. Second, the tank lacks adequate close-in observation. It is therefore highly vulnerable to close-in individual antitank measures and is not particularly suited for close combat with enemy infantry.

The armored infantry, on the other hand, while lacking the heavier fire power and armor protection, is highly versatile. *It can be employed either mounted or dismounted.* This is the chief reason for having an armored division, rather than the "universal division." Dismounted, it loses most of its sensitiveness to terrain. Only major terrain obstacles seriously affect its mobility on the ground.

Thus when the tanks, because of the terrain, lose their ability to maneuver, the armored infantry can, by dismounted action, overcome an immediate terrain obstacle and enable the tanks to regain their mobility. Further, as the tanks begin to close with the enemy, they become highly vulnerable to close-in antitank measures and lose their effectiveness against personnel in their immediate vicinity. Here again the armored infantry, dismounted, can furnish close-in protection and can engage in the close combat that is necessary to seize, mop up, and hold the ground that has been gained. It now becomes obvious that the tanks and armored infantry are complementary members of the team; that each has shortcomings that are offset by the advantages of the other. Also, the need is apparent for the armored infantry to be mounted in transportation equal to the tank in mobility and providing some armor protection. The armored infantry must so use this transportation, and must be located with respect to the tanks, that it can be immediately available to engage in the dismounted action mentioned above.



In the Primary Role

All of our discussion so far seems to point up the armored infantry accompanying or following the tanks, to engage in dismounted, close-in combat when needed. One might be led to ask, "Does not the armored infantry play the leading role, supported by the tanks, in some situations?" The answer is, of course, that it does. Whenever the terrain or the objective is such that the armored infantry can, by dismounted action, better carry the fight to the enemy, then it is so used. Such situations occur when woods or close terrain render the cannon on the tank virtually useless and at the same time make the tank vulnerable to close-in antitank measures. Likewise, in towns or built-up areas, fields of fire for the tanks are limited, and they again become vulnerable to short-range antitank weapons. Whenever streams, mine fields, or similar obstacles deny mobility to the tanks, the armored infantry is employed in the leading role until the obstacle can be breached and mobility restored to the tanks. In all these predominantly armored infantry missions, tanks are employed in the supporting role. They provide direct fire support and furnish antitank and other protection to the front, flanks, and rear. Thus we see how the terrain and the organization of enemy resistance become determining factors for the combat command commander in organizing his reinforced battalions and in assigning them missions.

Transportation

We have had a lot to say about the *what* and *why,* but what about the *how?* Just how, in addition to the formation of these combined arms teams of tanks and armored infantry, does the armored infantry accomplish this mission of supporting the tanks, or perform the leading role in a mission with tank support? First, let us cover the means of transportation of the armored infantry. Normally, the armored infantry ride in their armored personnel carriers, accompanying or closely following the tanks until they approach the objective and begin to close with the enemy. They then dismount and carry out their action dismounted. Infrequently, when it is necessary to conserve road space or gasoline, or for other reasons to decrease the number of vehicles being used, the armored infantry may be transported on the tanks. Here they are highly vulnerable to enemy small-arms and artillery fire and gain no advantage other than the transportation afforded by the tanks. When distances to objectives are short, or when terrain or other factors deny the use of the armored personnel carriers, the armored infantry may conduct their entire attack dismounted. Thus we have them normally mounted in their armored personnel carriers until they approach the objective or the enemy, and infrequently mounted on the tanks or dismounted. In all cases, however, they dismount to close with the enemy.

In the Attack

A reinforced armored infantry battalion organizing for an attack usually distributes its elements in two forces: a base of fire and a maneuvering force. All of the elements that the terrain and the enemy situation will permit are assigned to the maneuvering force. Any elements not desired for this force may be placed in the base of fire. The base of fire consists primarily of artillery, mortars, and similar supporting weapons, and may include any tanks and armored infantry that are not included in the maneuvering force. In some cases, a third force—a reserve—may be formed. This is usually done when open flanks exist or when there is some threat of an enemy counterattack. Tanks and armored infantry in the base of fire may also constitute this reserve as long as they are not so heavily engaged with the enemy as to prevent their movement. Plans are made for the use of troops in the base of fire, or in the reserve, in an offensive role as the attack develops.

U. S. Army

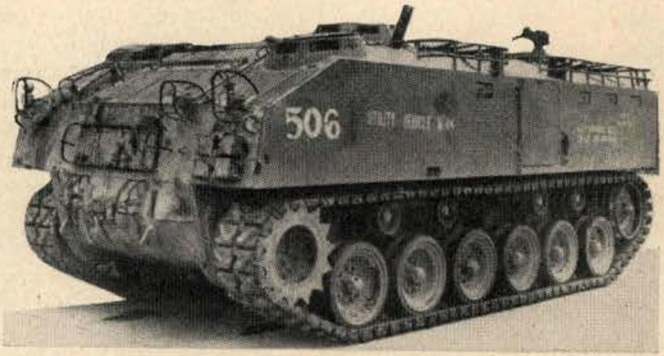
To be mounted except in moments requiring close-in dismounted action puts fresh manpower into action.

Tanks within the reinforced armored infantry battalion are preferably used in the maneuvering force; however, the very factors which led the combat command commander to form an infantry-heavy reinforced battalion may limit the use of tanks in the early stages of the attack. In these cases, the tanks are placed with the base of fire or the reserve, to be committed offensively as soon as feasible.

Within the maneuvering force, the terrain and the situation permitting, the tanks will lead, closely followed or accompanied by the armored infantry in their carriers. The armored infantry will accompany except when enemy tank or antitank fire makes it unwise to expose the carriers. When they follow, they move by bounds as closely behind the tanks as the terrain and the enemy will permit, usually just under cover from enemy tank and antitank fires. Whether accompanying or following the tanks, the armored infantry dismount whenever dismounted action is needed to assist the tanks in maintaining their attack, and mount up rapidly to continue when the tanks are again able to advance.

When the terrain or enemy situation will not permit the tanks to lead the attack, the armored infantry will attack dismounted. The tanks will support this attack by direct fire initial-

M-44 ARMORED UTILITY VEHICLE



U. S. Army

The M-44 is a completely closed-in vehicle with all around protection for the armored infantryman from small arms and shrapnel.

ly. As the armored infantry approach the objective, and after any obstacles to tank movement have been removed, breached, or bridged, the tanks will pass through the armored infantry and lead the assault on the objective. In a similar situation the tanks might approach the objective from a different direction than the bulk of the armored infantry, if routes for the tanks can be found around either or both flanks. The armored infantry and tanks would then assault the objective simultaneously from two or more directions.

Finally, when the terrain or other factors absolutely prohibit tank movement, the tanks with the armored infantry might support the attack by fire alone.

THE TEAM

This article on the subject of infantry in the armored team is the first of a series of articles which will appear one per issue covering the various arms and services in the armored division organization. These will include artillery, engineers, medical, ordnance, signal, quartermaster, and antiaircraft, all authored by faculty members at The Armored School, the college of the Armored Cavalry. In addition to this larger view of the parts of the team, subsidiary articles will appear regularly on the related technical material.

To illustrate some of these principles, let us take a hypothetical situation wherein a reinforced armored infantry battalion consisting of three rifle companies and a medium tank company is given the mission of attacking through a mine field and seizing a piece of high ground. Initially, it would be logical for the battalion commander to assign the job of breaching the mine field, and of establishing a bridgehead ahead of it, to two or three of his rifle companies supported by armored engineers. During this action the tanks would support by direct fire on assigned targets or targets of opportunity and by furnishing protection to the flanks and rear. Once the mine field was breached, the tank company, with any armored infantry not engaged in the breaching operation, would move through the breach and assault the enemy position on the high ground. Should all three of the rifle companies have been used in the initial operation against the mine field, one or more of these companies would rapidly mount the carriers (which would follow the tanks through the breach), continue the attack mounted until they reached the objective, and then, together with the tanks, close with the enemy.

In the Defense

In the defense the armored infantry likewise plays an important role. The same principle of forming teams of tanks and armored infantry is adhered to. There are two types of defense --sustained and mobile—that are used by elements of the armored division. The sustained (or deliberate) type of defense is the same as that used by the infantry division. It is based upon a main line of resistance with security forces in front and reserves behind. It attempts to delay and destroy the enemy by fire as he approaches the MLR, to stop him in front of the MLR by a highly concentrated band of final protective fires, to repel him by close combat at the MLR, or to eject him by counterattack by the reserve should he penetrate the position. In this type of defense the armored infantry normally garrison the main line of resistance, supported by tanks which provide antitank defense for the MLR and add depth to the defense and strength to the counterattacking reserve. Here again the armored infantry are employed in a dismounted role, their carriers being held in assembly areas in the rear.

The other type of defense, the mobile defense, is a defense which capitalizes on the mobility, fire power, and shock action inherent in armored units. It is the defense of an area by maneuver and counterattack. This defense is organized in two echelons: an outpost line and a reserve. The outpost line, which consists of a number of reinforced tank and armored infantry platoons, is placed where it commands the best observation in the area and blocks the most likely avenues of enemy approach. The outpost lines also places observation posts (listening posts at night) out in front of its position to gain the earliest possible ground observation of the enemy. The mission of the outpost line is to delay and block or divert the enemy as he approaches. Behind this line is placed a strong reserve—one-half to two-thirds of the force, if you like to remember figures. This reserve prepares counterattack plans and, as the enemy approaches, maneuvers to place itself in the best position to deliver a decisive blow.

In the mobile defense, the bulk of the armored infantry is placed on the outpost line and the bulk of the tanks in the reserve. Thus within the combat command we can expect to find the reinforced armored infantry battalion occupying the outpost line and using its supporting tanks primarily in the antitank role. Some of the armored infantry will be assigned to the tank battalion in reserve, to complete the combined arms organization of that force in accordance with the principles that we discussed above regarding the offense.

TWO-WAY STREET

We'd like to call your attention to the recent article of General Omar N. Bradley in *Collier's* magazine. General Bradley writes of democracy and our country. He emphasizes that with our privileges we have responsibilities as well, a thought many seem to forget.

This is such an excellent appraisal of the American way of life—of spiritual values as opposed to material desires, that we commend it to all.

The Editors.

Part of the Team

From the preceding discussion we believe that what is most apparent is that the armored infantry battalion is truly one of the principal fighting teams; that a battalion commander, tank or armored infantry, must be prepared at any time to command as many companies of one as of the other; and that the reinforced armored infantry battalion can expect to find itself in the assault as often as in the support role.

An Atlas of Ignorance

by S. WHITTEMORE BOGGS

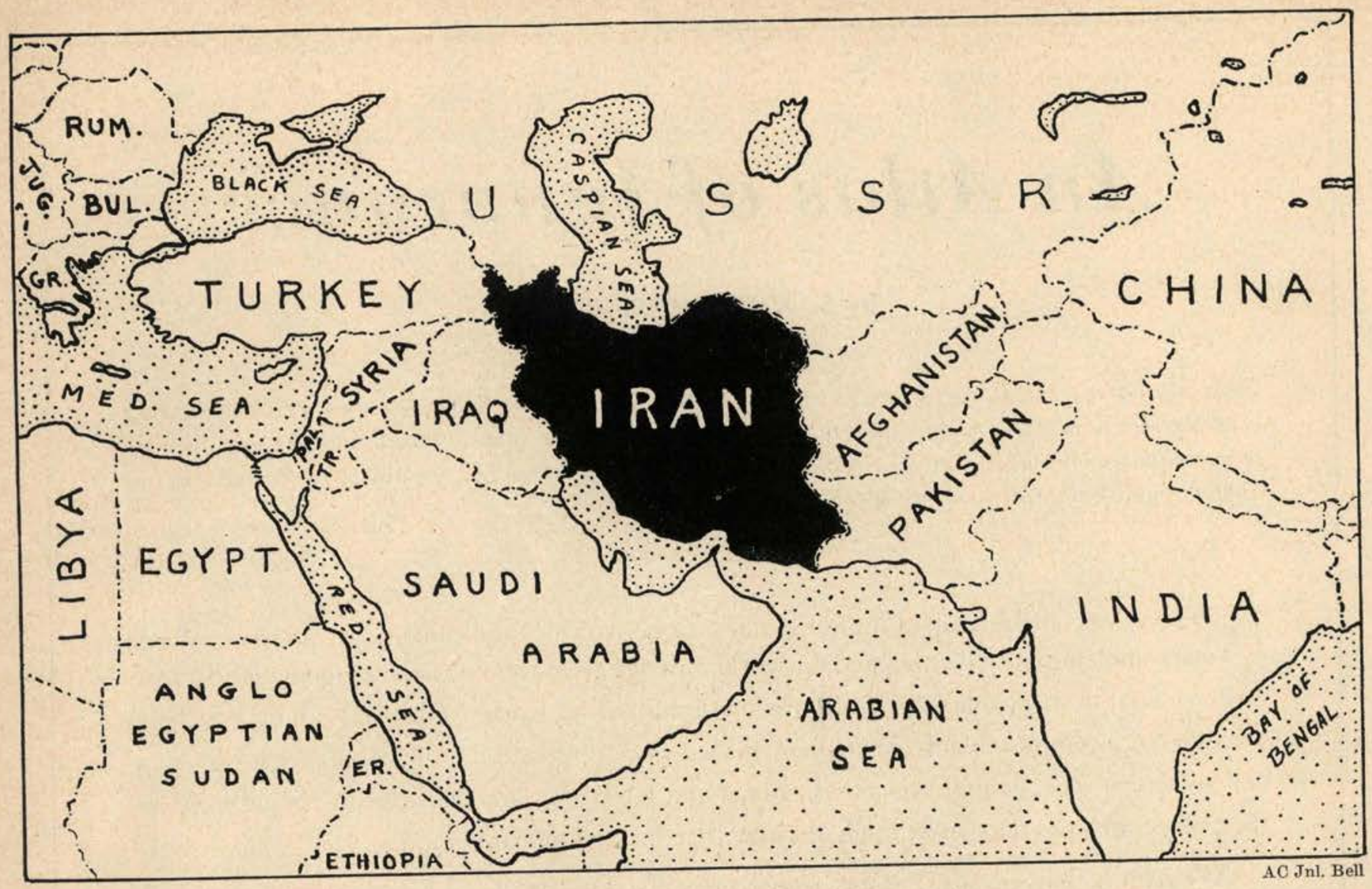
[Editor's Note: *Mr. Boggs is Special Adviser on Geography to the State Department. The following is an abstract from a talk given before the American Philosophical Society several months ago. Because of its relation to President Truman's Point Four, and the signficance of the subject to the military, we hope to publish the full paper by Mr. Boggs in another issue.*]

NO accurate, reliable map of the world has ever been made, and none is yet possible. World maps and encyclopedic compendiums of knowledge gloss over vast areas of ignorance because, in every field of mappable knowledge, there are millions of square miles concerning which information is a complete blank or extremely inadequate. This is true of topography, geology, mineral resources, soils, natural vegetation, animal and insect distributions, climate, population, anthropology, diseases and many other subjects that are vital to mankind.

We dare no longer regard this situation complacently. For the first time in history there are world problems, and the aggregate of the world's knowledge is insufficient even for present operations. Unless there is honest, intelligent effort to fill in the principal gaps in encyclopedic regional data about the world and its resources and peoples, each nation will continue to formulate policy on the basis of its own fraction of the inadequate sum total of world knowledge. And collectively the nations will operate without sorely needed world-wide data in the physical and social sciences and in the humanities.

We therefore need an atlas of ignorance, with one or more world maps in each field of distributional knowledge. Erudition is required in compiling maps of ignorance, each map conspicuously disclosing the areas in which the world's total knowledge in one subject is most deficient. Concise accompanying text should indicate unsolved problems, and areas in which field work by competent specialists is essential. The first edition could be published in about two years and should stimulate the hard but exhilarating work yet to be done in the world's jungles, mountains, plains, hot and cold deserts and all oceans—greatly facilitated by new instruments now available for nearly every type of field observation. The wholeness of our problems will then be revealed.

We seem to be living in a world and in a universe in which creation is continuous. When we reflect upon how human interdependence on a world scale has evolved so rapidly, as an apparent by-product of science and technology, we may perceive it to be part of what Franklin called "the providence of God in the government of the world."



AC Jnl. Bell

The U. S. Military Mission With The Iranian Army

CARDED

by MAJOR GENERAL ROBERT W. GROW

THE long history of Iran has developed traditions and customs fitted to the climate, topography, methods of government and economy, and way of life of the people. These have been influenced for centuries by the attitude of powerful neighbors. Since the 17th Century, Iranian rulers have from time to time hired European experts to assist in reorganizing and modernizing the country's security forces. These military experts have been of many nationalities: French, German, British, Swedish, Russian. All have left an impact on the current military traditions in Iran. In the execution of his vigorous program of expanding and modernizing the Iranian Army, the late Riza Shah (1925-1941) bought equipment from many sources. Present equipment includes Swedish, Czech, Swiss, German and American items.

Iran and its neighbors, Turkey and Afghanistan, are the only nations bordering on the Soviet Union that, since 1939, have not lost territory or political independence to the USSR. In addition to its obligations under the United Nations Charter, the United States stated in the Tehran Declaration of 1943 its desire for the continued independence, sovereignty and territorial integrity of Iran.

In response to a request from the government of Iran for assistance, the United States Government agreed in 1942 to provide a small Military Mission to advise the Imperial Gendarmerie; and in 1943 to supply a similar Military Mission for the Iranian Army. The contracts were authorized from the Iranian side by acts of the Majlis (Parliament) and on the American side by the President, acting under his wartime powers.

The Military Missions are advisory only. As in the case of the Greek and Turkish Military Missions, the groups hold no command or staff functions. They hold no diplomatic privileges, and have no rights except those specifically granted in the contracts which are filed with the United Nations Secretariat.

The diversified duties of the Mission with the Iranian Army, concerned only with problems of organization, administration and training, require a balanced group, and the twenty American officers now assigned to the Mission represent all arms and services. The Iranian Air Force and Navy are integral parts of the Army. To meet their needs, the American Military Mission for the Army has an attached Air Force section and an engineer officer versed in naval matters. The Chief of Mission is advisor to the Minister of War and works closely with the Commander in Chief (the Shah) and the Chief of

Lying in the oil-rich Middle East, Iran is one link in a chain of free nations stretching from Western Europe to the Far East which have been receiving American aid in support of democratic principles and ideals. The former Chief of our Military Mission tells the story of its activities in the implementation of those aims.

Staff. Well-coordinated advice is assured by the assignment of a member of the Mission as an advisor to each appropriate War Ministry department. The Mission is stationed in Tehran, but its duties require the members to travel extensively. Travel is performed by air as much as possible, utilizing a C-47 belonging to the Mission, and is supplemented by motor transport.

Iranian security forces consist of the Army, responsible in general for national defense; the Gendarmerie, responsible for rural security of the type handled by our State Troopers; and the Police, responsible for urban security under the direction of the Central Police authority in Tehran. The Army is under the jurisdiction of the Ministry of War; the Gendarmerie and Police under that of the Ministry of the Interior. Except in areas which are from time to time placed under martial law, the responsibility for the maintenance of order within the country rests with civil authorities who may call upon the Army for assistance.

Long distances and difficult terrain, along with poor communications, have required the stationing throughout the country of relatively small garrisons. In view of this situation, small unit training and proficiency is relatively good, while unit training above the regiment is weak. The regiment is organized as a combat team. Cavalry regiments or battalions are included in most divisions, operating as mounted infantry. Animal transport is organic in battalion and smaller units. A limited amount of motor transportation is organic at division level, and is being extended to include the regiment.

U. S. Army

Major General Robert W. Grow, author of this article, is former Chief of the Iranian Mission. General Grow led the 6th Armored Division in the late war, and is now Commanding General at Fort Devens.

The courage and fighting ability of the Iranian is unquestioned, and is limited only by training in the use of modern equipment and by insufficient experience in modern methods of organization and administration. The correction of these deficiencies was the primary purpose on the part of the Iranian Government in requesting an American Military Mission for the Army. The aim of the Mission has been to determine the applicability of American military methods to the needs of the Iranian Army in the fields of organization, administration and training. Recommendations have been made only when there was every indication that they would be acceptable and successful.

AC Jnl-Bell

The Honorable John C. Wiley, U. S. Ambassador to Iran.

The Mission has made appreciable progress in meeting the wishes of the Iranian Government, even though it has been slow because of the aim that progress be permanent and in accordance with Iranian customs and traditions. The recent purchase by the Iranian Government of considerable U. S. Army surplus material will increase the value of the Military Mission to them by assuring assistance in the most effective use of the material. If Congress approves legislation, now pending, which authorizes continuance of military missions beyond the period of the President's Emergency Powers, this assistance can continue as long as it is requested by the Iranians.

There could be no more hospitable people than the Iranians with whom to live and work. Patience and tact, as anywhere else, are sure to bring success. The vast majority of the Iranian people, as well as the responsible leadership, welcomes American assistance as provided by the Military Mission to the Army. In spite of virulent Soviet attempts to describe American aid to Iran as endangering Iranian independence and sovereignty, Iranians remain convinced that they can count upon effective American support for common ideals, and on generous practical aid when and as needed. The United States is entirely sincere when it expresses its support for the independence, sovereignty and territorial integrity of Iran.

U. S. Army

Major General Vernon Evans is Chief of the U. S. Military Mission with the Iranian Army. During the recent war General Evans served as Chief of Staff of the China-Burma-India Theater.

IRAN'S ARMED FORCES

Associated Press

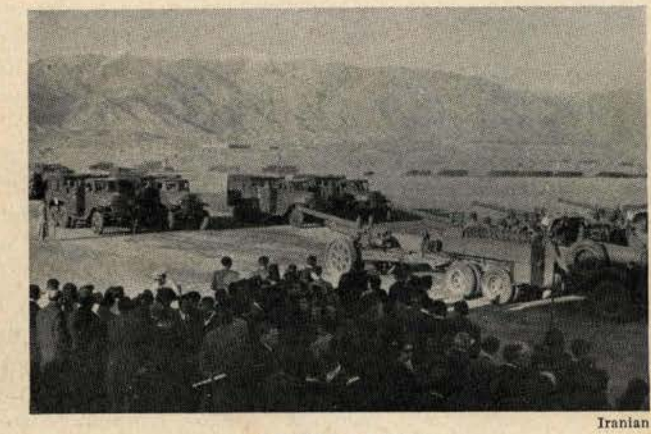
ARMOR

Iranian Army is equipped with tanks manufactured at the famous Skoda Works in Czechoslovakia.

Iranian

COMMANDER IN CHIEF

His Majesty Mohammed Reza Shah Pahlavi presents a shoulder insignia.



Iranian

ARTILLERY

Iranian Army Artillery in a recent review held in Tehran.

Iranian

IRREGULARS

Iranian irregulars of the Zafaranlou tribe form a part of the forces.

Iranian

AIR FORCE

Iran's Air Force is equipped mostly with Spitfires.

Iranian

NAVY

Navy and Air Force are part of the Army.

> ***Read, and refine your appetite; learn to live upon instruction; feast your mind and mortify your flesh; read, and take your nourishment in at your eyes, shut up your mouth, and chew the cud of understanding.***
>
> *Congreve*

Learning to Read

CARDED

by JOE M. HIBBS

HOW can a student cut down on burning midnight oil and at the same time get more out of his studies? Students of The Armored School are finding the answer in a new course, Remedial Reading. They are learning how to read better and faster. Officers of the Advanced Class, who completed the thirty-hour course in Remedial Reading last December, are whipping through their reading assignment in almost one-half the time required at the beginning of the school year.

The Assistant Commandant, Brigadier General Bruce C. Clarke, initiated the reading improvement program at The Armored School last summer. General Clarke realized the great demand which Armored School courses make on student reading ability. He also knew that the majority of Armored School students were in the same boat with the majority of other Americans—they have never been trained to read well, and that this inability was bound to prove a serious handicap to the officer during his tour of duty as a student and a limiting factor in his later development and professional growth.

Studies conducted at The Armored School support the findings of college and university reading clinics, that the average adult, regardless of his higher education, often plods through standard reading material at a speed of about 250 words per minute. The 132 officers of the Advanced Class bettered this average only slightly. Before training in the Remedial Reading course, they were reading at an average speed of 270 words per minute with 70 per cent comprehension of what they read.

Various factors contribute to poor reading ability. Such practices as word-for-word reading due either to overemphasis on oral reading in grade school training or to a narrow span of recognition slow down the speed of reading and limit comprehension. The habit of vocalization, silently forming each word with the lips and speech muscles, is another bar to efficient reading. The regression habit of going back to reread words in the same line of print plays havoc with both understanding and rate, and at the same time wears the reader out physically. Mind-wandering, or the inability to concentrate on the reading at hand is both a symptom and a cause of poor reading. Of course, an inadequate vocabulary can make reading difficult and meaningless. And finally, poor eyesight often causes reading to become a severe physical task.

Training in The Armored School Remedial Reading Laboratory is designed to remedy the above factors, and as a result enable The Armored School student to read at a much faster rate, with better comprehension and with more comfort.

Achievement of members of the Advanced Officers Class in improving their reading ability demonstrates the effectiveness of remedial reading training. This class realized an 83 per cent gain in reading rate and an eight per cent gain in comprehension. They jumped from an initial reading speed of 270 words per minute to 494 words per minute with an increase in comprehension from 70 per cent to 78 per cent. Before training, only six members of the class were reading over 400 words per minute. No one was reading faster than 510 words per minute. At the end of training, almost one-half of the class was reading above 500 words per minute, with four officers reading over 1000 words per minute. Since these reading speeds were all established under test conditions, the average reading rate for the class is probably above 494 words per minute.

The training which made this achievement possible for members of the Advanced Class centers around 28 periods of drill on two machines, the Tachistoscope and the Reading Rate Controller. The Tachistoscope is a 2 x 2 inch slide projector with a shutter attachment that permits flashing slides on a screen for intervals as short as 1/100th of a second. The use of this machine in rapid recognition and in improving reading ability was developed by Dr. Samuel Renshaw of the Ohio State University. The Armed Services used

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Joe M. Hibbs is a Civilian Educational Advisor and a member of the Research and Evaluation Division of The Armored School, Fort Knox, Kentucky. A captain in the Signal Corps and an instructor at the Fort Monmouth OCS during the war, Hibbs began his work at The Armored School in April, 1946.

He had previously completed graduate work in remedial reading at the George Peabody Teachers College and had done graduate work at the University of Chicago where he majored in education. He holds BA and MA degrees.

Hibbs supervises remedial reading clinics for the Advanced Officers' Class at The Armored School. He also supervises military historical research and individual research at the school. He was instrumental in setting up the remedial reading program and training at The Armored School.

the Tachistoscope and Dr. Renshaw's methods with outstanding success to train Army and Navy pilots in aircraft recognition during the last war. The Armored School is now using this machine and the Renshaw methods to train students to read better and faster. Tachistoscopic training consists of practice in recognizing five-, seven-, and nine-digit numbers as they are flashed on a screen for intervals of 1/25th to 1/100th of a second. This training widens the student's eye span, enabling him in reading to take in more words with each look. It also enables the student to see faster. In other words, the student learns how to see more—quicker.

The other half of each training period is spent on the Reading Rate Controller. This machine, developed by Dr. Buswell of the University of Chicago, forces the student to read at an increasingly faster rate. The machine itself consists of a platform, large enough to hold a page from any standard-size book, and a motor-driven cover-board which moves down over the printed page. The student's job is to read ahead of the moving cover. Various settings on the Reading Rate Controller permit reading speeds up to 2000 words per minute. With each successive period of training the student adjusts the Controller to a higher setting, so that he is always reading under pressure. A check of reading rates on the Controllers during the last drill period showed a class median speed of 720 words per minute, with twenty-one officers reading above 1000 words per minute. Two officers were going along at better than 2000 words per minute.

The Ortho-Rater

U.S. Army

This is a precision instrument which permits a ready check of visual skills.

The Opthalmograph

U.S. Army

The eye camera which photographs the eye movements of an individual while reading.

Tachistoscopic training and practice in speed reading on the Reading Rate Controller work together in establishing sound basic reading habits. The student through tachistoscopic training widens his eye span and thereby makes it possible to read meaningful word groups, whole phrases and sometimes entire sentences with one look. He also develops, through tachistoscopic training, faster and more precise recognition which results in faster reading and fewer regressive eye movements. Practice in speed reading on the Controller further develops and firmly establishes these new habits of recognition in the reading process. The habit of vocalization also gives way as the student attains speeds above 400 words per minute on the Controller. With increased proficiency on the Tachistoscope and faster speeds on the Reading Rate Controller, the tendency toward mind-wandering decreases, and the student finds it easier to become completely absorbed in the reading at hand. This was particularly noticeable with the Advanced Class. During the initial periods of training, members of the class were distracted by the slightest noise. Toward the end of their training, it was often necessary to address a student two to three times times in order to get his attention away from his reading.

Since The Armored School is the first Army school to provide such training for its students, the testing phase of the Remedial Reading course assumes an important role. Standardized reading tests are given before and after training to measure student achievement and to afford a basis for measuring the effectiveness of training techniques and methods. A film-strip record of each student's eye movements is taken both before and after training. This is made possible by the Ophthalmograph, a cleverly constructed camera which photographs on 35mm film the actual eye movements of an individual while reading. From this film record it is possible to compute the student's speed of reading, the number of regressions and "looks" required to read a line of print, the average width of the recognition span, and the average duration of the reading pause.

Before a student begins his training in the Remedial Reading Laboratory, he is given a visual skills test on the Ortho-rater. If this test reveals visual defects which might interfere with reading, he is advised to report to the eye clinic for a more thorough eye examination. Forty students in the Advanced Class were found to have had some visual defect. The majority of these students reported to the eye clinic and were either fitted with glasses or given corrective eye exercises. This phase of the reading program alone prevents many headaches and unfinished reading assignments among students of The Armored School.

The 125 students who have completed the Remedial Reading course believe in it. Members of the Advanced Class, in response to a questionnaire on what they thought of the training, were almost all in favor of the program and felt that they had benefited from such training. Sixty-three officers said that the training was quite beneficial. Twenty-one members of the class went one step further in expressing the belief that the training was very beneficial. A majority of the students believed the training had helped them in preparing their study assignments and had made possible longer periods of study and reading without fatigue and eyestrain. Three-fourths of the students expressed a desire to continue remedial reading training. Several officers indicated in the questionnaire that they intended to do so on their own time. One Major in the class summed up his reaction to the course with this remark, "I have always been a slow reader and I feel I have gained a great deal from this course. I only wish I had taken it ten years ago."

One of the questions most frequently asked by visitors to The Armored School Remedial Reading Laboratory is, "Can I do anything to improve my own reading without having access to such equipment?" The answer is, "Yes." With few exceptions, the average adult can train himself to read better by devoting thirty minutes a day over a year's time to reading the newspaper or other standard reading materials at an increasingly faster rate. This is not as simple a solution as it sounds, however. Very few of us can find the time and have the will power to persist in such self-training. This is especially true of students who find themselves already overburdened with required reading. The equipment serves to speed up training and to make progress in better reading a surer bet for each individual. More general distribution of this equipment will be a big training assist.

The Armored School student who completes the Remedial Reading course or the officer who trains himself to read better and faster will have gained an advantage that will serve him not only in the role of a student but in future assignments throughout his Army career.

The Reading Rate Controller

U.S. Army

On this machine twenty-one officers of the advanced class attained reading speeds over 1000 words per minute.

The Tachistoscope

U.S. Army

Training on this machine enables The Armored School student to see more—quicker.

NEWS NOTES

Royall 1948 Report Details Widespread Army Activities

The Department of the Army made public on March 11 the annual report by Secretary of the Army Kenneth C. Royall to Secretary of Defense James Forrestal.

The 356-page report covers in detail the widespread and diverse activities of the Army during the fiscal year 1948 as well as some of its activities after that date.

The period covered, Mr. Royall said, was one of "international tension which has created new duties for the Department, has increased the complexity of existing problems, and has led to an increase in the authorized size of the Army to the largest peacetime figures of all time except during actual mobilization for war or demobilization thereafter."

Seventeen pages of introductory material digested the Department's activities. Detailed summaries, including twenty-eight tables, numerous charts and exhibits, and five appendices followed the introduction.

Civil functions, the Secretary showed in his report, make up a large portion of the Army's activities. The most important of these is government of occupied territories and relief activities therein.

The projects assigned to the Army for civil engineering works involved Federal expenditures of $4,000,000,000, Mr. Royall pointed out. The Government of the Canal Zone, operation of the Panama Canal, together with the Panama Railroad and Steamship Line and studies of new canal sites were among other civil works undertaken by the Army during the period.

Under "Miscellaneous Activities" in his introduction, Mr. Royall mentioned the operation of the railroads during the May (1948) strikes, and the continued supply of oversea theaters during the September (1948) longshore stoppages on the Pacific Coast.

Settlement of war contracts, return of World War dead, activities of the Army Audit Agency, clemency and rehabilitation of wartime offenders, industrial mobilization, personnel and morale programs, and the 1948 Army reorganization were among the topics dealt with in the report.

The report also outlined the Army's activities in support of unification, the recommendations made for improvement of unification, and the Department's general views on the need of strengthening the unification statute.

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Army Day 1949

April 6, 1949, will be the 13th Army Day proclaimed by a President of the United States, and the 22d observation of the day by its sponsors, the Military Order of the World Wars.

Since the first official Army Day observance in 1937, each succeeding celebration has been an improvement upon its predecessors. It is hoped that Army Day 1949 will be no exception to this rule.

Again this year high-ranking officers of the Army will address public gatherings at many locations. Open house at military installations will attract many visitors. They will have the opportunity to observe the operation of these individual segments of the military establishment at close range. More visitors than ever before may be expected this year because of the interest in how the Army lives and works that has been generated by the enlistment and selective service programs under the Selective Service Act of 1948. Many of these young soldiers will march in Army Day parades.

While April 6th is the official Army Day, many communities and groups will find it convenient to hold ceremonies on some other day of the week in which Army Day falls. This will have the effect of extending the impact of the occasion over a period of more than one day and will make possible fuller participation by the Army in local observances.

SECRETARY OF DEFENSE

U.S. Army

Louis A. Johnson, named to succeed Mr. Forrestal, was Assistant Secretary of War under President Roosevelt.

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New Army Pamphlet

The first issue of a new Department of the Army pamphlet entitled *Officers' Call* was distributed in March to all officers on active duty.

The pamphlet inaugurates an Officers' Information Program designed to assist commanders by making available timely information on Department of the Army decisions and policies, and by furnishing discussion materials on subjects of professional value to officers.

Details of administering the program, which was announced in SR 355-20-5, dated 25 January 1949, are left largely to commanders, who are expected to find it a helpful medium for reaching officers with additional information of more local value.

The program contemplates monthly officer assemblies during which the material furnished in *Officers' Call*, as supplemented locally, will be presented by selected speakers. Presentation will be followed by open discussion in which participation by all officers is desired.

The general subject areas to be covered in the program are (1) Significant military, national, and international matters; (2) The Army's missions, plans, and policies; (3) The exacting demands of the military codes of duty and honor; and (4) The type of leadership required in the Army.

An important feature of the pamphlet, *Officers' Call*, is the *Pro* and *Con* page, which will carry letters from officers in the field. This feature was included specifically to elicit criticisms and suggestions regarding the program, in an effort to make it of greater value to the officers. Direct correspondence with the editors is authorized.

The first few topics scheduled for presentation include:

The Officers' Information Program
Problems of the Army
Mission of the Army
The Officers' Career Management Plan

◇ ◇ ◇

Army Lengthens Basic Training Period to Fourteen Weeks

A revised, fourteen-week program of basic military training for enlisted men was recently put into effect by the Army, replacing the present eight-week course, the Department of the Army has announced.

The new program was adopted in the following training divisions:

Third Armored Division, Fort Knox, Kentucky.
Fourth Infantry Division, Fort Ord, California.
Fifth Armored Division, Camp Chaffee, Arkansas.
Fifth Infantry Division, Fort Jackson, South Carolina.
Ninth Infantry Division, Fort Dix, New Jersey.
Tenth Infantry Division, Fort Riley, Kansas.

The Army explained that the eight-week basic course was being increased, as previously planned, to fourteen weeks now that the Army has reached its authorized strength.

The eight-week course was inaugurated in the spring of 1948 in order to train as rapidly as practicable volunteers and men selected for service by the Selective Service Act of 1948, who were urgently required for the expansion program of the Army.

The mission of the basic program is to effect a smooth transition from civilian to Army life and produce basically trained soldiers through the study of fundamental military subjects essential to all branches of the Army. It emphasizes physical conditioning and discipline; develops soldierly qualities, pride in self and pride in the Army, and promotes high standards of responsibility, conduct, manner and morale; and gives weapons training in small arms. It does not provide branch training, such as infantry, artillery or armored cavalry.

AND FEATURES

Fairchild Licenses Continental Motors to Use Al-Fin Process In Tank Engines

Fairchild Engine and Airplane Corporation has announced the signing of a license agreement covering use of its Al-Fin bonding process by Continental Motors Corporation of Detroit.

J. Carlton Ward, Jr., Fairchild board chairman, said Continental will use the process in manufacturing a new series of lightweight, air-cooled gasoline engines designed to power U. S. Army tanks, gun carriers, trucks, and other ordnance vehicles. The Al-Fin process, which chemically bonds aluminum or aluminum alloys to steel or iron, will be used to attach aluminum cooling fins to the cylinder barrels.

Continental's six new engines, ranging from 125 to 1,040 horsepower, weigh roughly one-third as much as liquid-cooled engines of the same horsepower. They require no radiator, water pump or circulation system, and take up much less room. Air-cooled engines are also less vulnerable to enemy fire.

The new engines were designed specifically for military use in vehicles where light weight, mobility, and reliability in extremes of climate and terrain would be essential characteristics. Air-cooled engines offer obvious advantages for operation in arctic or tropic temperatures. They have no cooling liquid to freeze or boil.

The engines are remarkable for simplicity of design, interchangeability of parts, and the comparatively small stock of spare parts required for repair work. Only two basic cylinder sizes are employed, with diameters of 4 and ⅝ inches and 5 and ¾ inches. The 4-, 6- and 8-cylinder models up to 375 hp are horizontally opposed, while the larger 8- and 12-cylinder models are in-line Vee-type.

The new M-46 General Patton medium tank, equipped with the 12-cylinder air-cooled engine developing 810 hp has 50 per cent more speed than its predecessor, the General Pershing tank. The Patton tank travels 30 miles an hour and also is more maneuverable.

◇ ◇ ◇

New Battery

A new electric battery that will start an engine at a temperature of sixty-five degrees below zero has been developed by the Army Signal Corps.

The new low temperature battery, developed at the Signal Corps Engineering Laboratories at Fort Monmouth, in cooperation with the Delco-Remy division of General Motors Corporation, will start the cold engine of a truck after an all-night stand in sub-zero weather.

Engineers explained that a standard battery, even when fully charged will give only ten per cent of its power at minus 65 degrees, which is not sufficient to crank an engine.

◇ ◇ ◇

1st Armored Division Association

Arrangements have been completed and contracts have been let for the publication and distribution of the long awaited 1st Armored Division History. Announcements will be placed in the mail in the next few weeks for all men who served in this division provided their address is known.

The Association has a file of some 18,000 names and addresses of former members.

To validate this list, the Association asks that every former member of the Division send in his name and address at once to insure that he has his chance to secure his copy of the History of the Old Ironsides Division.

The offices of the Association are located at 1115 17th Street, N.W., Washington 6, D. C.

◇ ◇ ◇

General Clarke to Leave Armored School

As the JOURNAL goes to press orders are out assigning Brigadier General Thomas L. Harrold, now on duty with the European Command at Heidelberg, as Assistant Commandant of The Armored School at Fort Knox, Kentucky, to replace Brigadier General Bruce C. Clarke, present Assistant Commandant, who will go on to a new assignment. The change is scheduled to take place in midyear.

◇ ◇ ◇

Report to the Army

A newsletter of general interest is undergoing First Army distribution testing, and at the conclusion of a trial period will receive Army-wide distribution.

◇ ◇ ◇

Flame-Resisting Oil Tank Developed for U. S. Navy

A new type aviation oil tank capable of withstanding fire and temperatures of 2000 degrees Fahrenheit has been developed for the United States Navy by the B. F. Goodrich Company.

The container, first one of its kind to withstand direct flame, is also bullet-sealing, which increases its value for use in naval aviation. An outer coating in which American-made rubber is combined with other materials gives unusual resistance to heat and fire, greatly increasing the safety factor of fuel cells, particularly when they are installed in combat aircraft.

The new tank is rigid and considerably lighter than other fuel cells. During tests with a blowtorch the tank was undamaged after prolonged exposure to temperatures greater than 2000 degrees. An ordinary aluminum fuel cell disintegrated in less than 60 seconds under the same treatment.

The company said the material may be applied also to gasoline tanks and other containers for volatile fuels. Other applications include fuel tanks for automobiles, buses, trucks and tanks. Its eventual application to commercial aviation would greatly increase passenger and crew safety.

? ? ARE YOU WELL INFORMED ? ?

1. Italy's Premier Alcide De Gasperi and France's Premier Henri Queuille are familiar names to most of us. The presidents of those nations are perhaps less well known. Can you name them?
2. Discussion on a fourth meeting of the Big Three has been active recently. Do you recall the dates and places of the first three Big Three meetings?
3. What do the following signify to you, and with what countries do you associate them? (1) Majlis (2) Diet (3) Storting.
4. The activities of the Karens have been the subject of press reports in recent weeks. Explain.
5. General Eisenhower has been recalled to the Pentagon to serve for a period as presiding officer of the Joint Chiefs of Staff. Name the Joint Chiefs.
6. The world's oldest and smallest republic held elections recently. What is its name and general location.
7. An American negro has been serving in an important peace assignment for the U. N. Name the man and his position.
8. Trials of church leaders in two Soviet satellite countries have been in the headlines in recent weeks. Name the countries that form the Soviet bloc.
9. An Air Force B-50 recently made a nonstop flight around the world, refueling at the Azores, Dhahran, the Philippines and Hawaii. The U. S. leases an air base at Dhahran. Where is it?
10. Field Marshal Montgomery recently left his post as British Army Chief of Staff to take over a new assignment. What is it?
11. Four of the following five have something in common. Who is out of place in this grouping, and why? Mao Tse-tung, Maurice Thorez, Francisco Franco, Palmiro Togliatti, Ho Chi Minh.
12. In the area of defense blocs, there has been much talk of a Scandinavian Pact. Norway and Denmark have looked favorably on the North Atlantic Security Pact. Sweden has held aloof. Which of these three countries has a common frontier with Russia?

Answers on page 56

EDITORIALS

BRIDGING THE GAP

One of the things that strikes us in this day of more unified effort is the ever-increasing cooperation between industry and the armed forces. Industry has a full-time spot in the national defense scheme. There is a close, two-way liaison between the services and industry, a highly important thing in this day of advanced war machines.

We used to hear so much discussion of the practice of building our organizations around vehicles: of impractical commercial designing of military equipment: of allowing the ultimate user of the product, the combat soldier, to exercise little or no voice in the conception of the tools of war.

The war decade has snapped us away from many undesirable situations. Today we are getting well into the practice of close liaison between the military establishment and industry—between the designer, the procurer and the manufacturer—between the maker and the user. That is becoming equally true in the service sense as well. The procurement service is close to the using arm. The combat man, experienced in the recent war, has brought his valuable knowledge of equipment needs into the design picture, and more effective products are the result.

Some lingering faults are being corrected. Liaison and increased all-around consciousness will smooth out the worst of these. We are sure as we analyze the thing that we can in some measure contribute to the ironing-out process through the pages of the JOURNAL. A look at these first two issues of the year indicates the pattern.

In a recent series of articles, Hanson Baldwin, Military Analyst of *The New York Times,* placed the United States a poor second or third in the world race for armor superiority. Since only three nations, Russia, Great Britain and ourselves, are armor producers on any sizable scale, that gives pause for thought. Whether or not we agree with Mr. Baldwin's thesis, we must wonder why the leading industrial nation of the world should be second to anyone. In looking over the background of tank development we must consider all of the facts on tanks from their conception to the day they roll off the assembly line. Armor is definitely an industry-army project, getting the attention of the best in that team. Colonel Heiberg's article on tank and tank gun ammunition development in our last issue is excellent background on some of the problems, requiring the best in associated work from the designer through the fighter.

In that same issue General Guderian mentioned the good fortune that might befall the soldier able to exert any influence on the tools with which he would fight any future war. In this issue we have an answer to that in Colonel Neville's article on Britain's College of Science. Our user-soldier has available an ever-increasing amount of schooling that will provide the education to equip him to influence his future tools of war.

Fairchild's Boutelle, in his article on Air Transportability, gives us a sampling of the problems that crop up along the road from conception through design, model and production for use, in the important field of air transport.

With industry and the services working together we have a pattern out of which comes the assurance of our top position in the line of national preparedness.

Articles for the Journal

We are always happy to have unsolicited articles for consideration as possible JOURNAL material; however, along this line we would like to express a thought or two.

The JOURNAL is designed to provide the larger view of the professional field. Analyze the material you plan to send us. Does it fit our field, or is it unit newspaper material? Will it mean something to readers in Germany, Korea, Trieste, Rio de Janeiro, Greece, the Philippines, Puerto Rico, Austria, Japan, Alaska, the ZI?

The Story of Soviet Armor

Last issue we ran the first in a series of articles by Garrett Underhill telling The Story of Soviet Armor. Author Underhill has dug up some new material bearing on the coming sections of the piece, with the result that we are holding off one issue to allow its incorporation in succeeding parts.

We are happy to have another story by an enlisted author in this issue. We have received some fine comment on the article in last issue, and we hope that this can be carried along in each number.

The ARMORED CAVALRY JOURNAL is available in the European Theater through Stars & Stripes distribution, and in the Pacific Theater through the Post Exchange system. It is available in the ZI at the Pentagon Newsstand and in the Book Department at various posts and stations. Single copies 75¢.

Report of the Annual Meeting of THE ARMORED CAVALRY ASSOCIATION

PROCEEDINGS

The 60th Annual Meeting of the United States Armored Cavalry Association was held Monday evening, 17 January 1949, at the Army-Navy Club in Washington, D. C. In addition to those present, 605 members were represented by proxy. This number represented a quorum.

Major General Hobart R. Gay, Acting President, presided. Upon presentation of a motion, which was duly carried, the reading of the minutes of the previous meeting was dispensed with.

The Secretary-Treasurer then read the Financial Statement (see below) accompanying it with a description of a re-valuation of certain items, suggested by the Auditing Committee, in order to put the Association on a solid footing from which to start the New Year. The stock on hand of the Chamberlin book reprint, Riding and Schooling Horses, was inventoried at cost rather than at its unearned potential value, and in addition, unpaid renewals of subscription were dropped from the list of assets. This resulted in an apparent operating loss for the year, which is only a paper loss.

The Secretary-Treasurer then gave a summary of the year's activities, which included a complete change of personnel. In February of 1948, Captain William G. Bell replaced Major Harold D. Steward as Associate Editor. In August Colonel Wesley W. Yale replaced Colonel Edwin M. Sumner as Editor, and T/Sgt. Samuel W. Puterbaugh replaced S/Sgt. Carlton Garris, while Mildred Puterbaugh replaced Natica Brown as Business Manager. Another change in Editorship occurred in early November, when the present Editor, Colonel Claude O. Burch, succeeded Colonel Yale.

The size of the JOURNAL was reduced from eighty to sixty-four pages beginning with the September-October issue, and the subscription price was raised from $3.00 to $3.50 in order to meet rising printing costs, and to improve the quality of the magazine. The total number of subscriptions for the year increased by almost one thousand over the previous year, mostly the result of a change of policy effected in the closing quarter of the year.

Following the reading of the report, a slate of candidates for officership of the Association was presented and voted upon. Major General Hobart R. Gay was elected President, and Major General Ray T. Maddocks Vice President. The full list of Officers appears on the masthead on page one.

FINANCIAL STATEMENT

FINANCIAL STATEMENT
of
THE UNITED STATES ARMORED CAVALRY JOURNAL
for the year ending
31 DECEMBER 1948
CASH STATEMENT

Department	*Receipts*	*Expenditures*
ARMORED CAVALRY JOURNAL	$10,431.96	$ 8,494.01
Book Department	5,185.60	4,550.37
Rent and Rental Expense	900.00	1,846.16
Income from Securities	170.00	
Eleventh Armored Division Association	3,969.04	1,146.81
Miscellaneous	289.48	418.11
Stationery and Postage		756.11
Salaries		2,542.77
Social Security		55.48
Withholding tax		457.30
Insurance		29.08
Janitor Service		60.00
Office Supplies		247.76
Telephone and Telegraph		389.32
Total Receipts and Expenditures	$20,946.08	$20,993.28
Bank Balance as of 1 January 1948	1,563.82	
Bank Balance as of 31 December 1948		1,516.62
BALANCE	$22,509.90	$22,509.90

Operating Loss for the year 1948—$47.20

Total Assets	$11,474.07
Total Liabilities	$ 4,987.00
Net Value of the Association, 31 December 1948	$ 6,487.07

General Guy V. Henry offered a motion of thanks to General Gay for his efforts during the active 1948 season, which included discussion and correspondence with other associations on a merger proposal.

Among those present at the meeting were General Verne D. Mudge and Colonels Burnside, Walker, Frost, Porter, Curtiss, Thomas, Ackerman and Barr. Upon adjournment of the meeting a buffet was served.

ARE YOU ELIGIBLE?

The following are eligible for membership in the U. S. Armored Cavalry Association:

All General Officers of any of the components of the Army.

All Cavalry and Armored Cavalry Officers of any of the components of the Army.

All Officers and Warrant Officers on duty with or assigned to Cavalry or Armored units.

Geiselhardt
Kreis Hall

U. S. Army

CARDED

THE CRAILSHEIM OPERATION of the 10th Armored Division

by CAPTAIN GEORGE F. HAMEL

AS the American armies closed up to and crossed the Rhine River during the month of March 1945, it became apparent that the European War was entering its final stages. However, despite the fact that the German Army was rapidly disintegrating, it was still capable of offering strong resistance along various sectors of the front during the month of April. Consequently, many units were engaged in some heavy fighting during this period, although these actions were usually rather short in duration. I shall describe in detail one such action, that of the 10th Armored Division operating as part of VI Corps, Seventh Army, in the vicinity of Crailsheim, Germany, from 5-10 April 1945.

I

1 April to 4 April 1945

Drive From the Rhine to the Neckar

In order to give the reader a clearer picture of this action it will be necessary for me to describe briefly the events which led up to this operation. Therefore, I shall quickly cover the period of 1 April to 4 April 1945, without attempting to discuss it in full detail.

The 10th Armored Division, which had been in action for about six months at this time, had been assigned to Third Army during most of its period of combat. However, upon reaching the Rhine River, the Division was transferred to Seventh Army, and fought as part of VI Corps for the remainder of the war.

It would be well to point out at this time that the division was far below strength in both vehicles and men at the start of the campaign east of the Rhine. The division had been in combat continuously from 20 February 1945, and had received practically no replacements since. Combat units, especially tank and armored infantry, were, on the average, at only about fifty per cent effective strength. This was to be a vital factor in the days ahead.

During the initial stages of the campaign east of the Rhine, priority of troops on the Western Front was given to the armies in the north, until the Ruhr industrial area could be reduced. Therefore Seventh Army, operating with a minimum of combat troops, was unable to launch a large-scale offensive. However, *A COMBAT NARRATIVE FEATURE*

The operation of the 10th Armored Division in the Heilbronn—Crailsheim action is at once an excellent illustration of employment of armor and the problems of command, communication and supply. Here is a worthwhile analysis for all students of armored warfare, as well as a good story for the general reader.

Seventh Army was ordered to attack out of its bridgehead, making its main effort to the east and northeast on the right flank of Third Army. Also, it was to send one corps to the southeast (Army right flank), to pave the way for an offensive into southern Bavaria and the German National Redoubt Area, as soon as more troops were made available.

VI Corps was given the mission of driving toward the southeast, and was assigned only three divisions at this time: the 63d and 100th Infantry Divisions, and the 10th Armored Division. The Corps plan was to spearhead the attack with the 10th Armored Division (attacking with three combat commands abreast), followed by the infantry divisions (100th Infantry Division on the right and the 63d Infantry Division on the left).

The 10th Armored Division plan was to attack southeast astride the Neckar River, with CCR and the 90th Cavalry Reconnaissance Squadron north and CCA south of the river. CCB, meanwhile, was to drive south along the Rhine until contact was made with the First French Army, then turn east and contact the remainder of the division in the vicinity of Heilbronn. See Map 1.

The 10th Armored passed through the infantry bridgehead on 1 April and made rapid progress at first against sporadic resistance. Corps had not anticipated having trouble near Heilbronn, and had ordered that it be captured and the offensive continued to the southeast. By 3 April the division had closed up generally along the line of the Neckar and Jagst Rivers, and was poised before Heilbronn.

When CCR and the 90th Cavalry Squadron reached the Jagst River, they found that all bridges across the river north of Heilbronn had been destroyed, and heavy artillery fire was received from south of the river. CCR and 90th Cavalry were relieved by elements of the 63d Infantry Division, and ordered to block to the east and northeast, protecting the flank of the 63d Infantry.

CCA began to run into stiffening resistance west of the Neckar opposite Heilbronn. During the day of 3 April, and the night 3-4 April, troops of the combat command fought to reach the river and capture a bridge intact. These attempts were unsuccessful, since the enemy troops withdrew slowly, and blew all bridges as the last of their men were forced across them.

Corps attached the 3d Battalion, 398th Infantry, from the 100th Division to CCA to establish a bridgehead across the Neckar just north of Heilbronn. This battalion crossed the river in assault boats before dawn on 4 April, and was successful at first in establishing a bridgehead against heavy resistance. However, at 0900, the battalion was counterattacked by a strong enemy force and driven almost back to the river. The battalion suffered severe casualties in this action, losing two complete infantry platoons which were cut off by the enemy attack. Since the enemy held the commanding terrain in the area, the task of establishing a bridgehead was extremely difficult. As soon as the bridgehead was large enough, a bridge was to be constructed under the supervision of the 10th Armored Division Engineer for the passage of CCA.

CCB was also meeting stiff resistance, and was moving slowly toward the river in an attempt to capture a bridge in the vicinity of Lauffen.

Thus it became apparent that the enemy was determined to defend Heilbronn, and was forming a defensive line along the Neckar and Jagst Rivers. This line ran from positions south of Heilbronn, north to the junction of the Jagst and Neckar, then west along the Jagst to its southward bend. As early as 4 April it was determined that elements of five German divisions, and several miscellaneous battle groups, were dug in along this line. It is understandable why the German high command decided to defend this area vigorously. Heilbronn, in addition to being the gateway to Bavaria and Upper Austria, was also the key point in the vital communications network connecting Heilbronn and Stuttgart with Munich and Nurnberg.

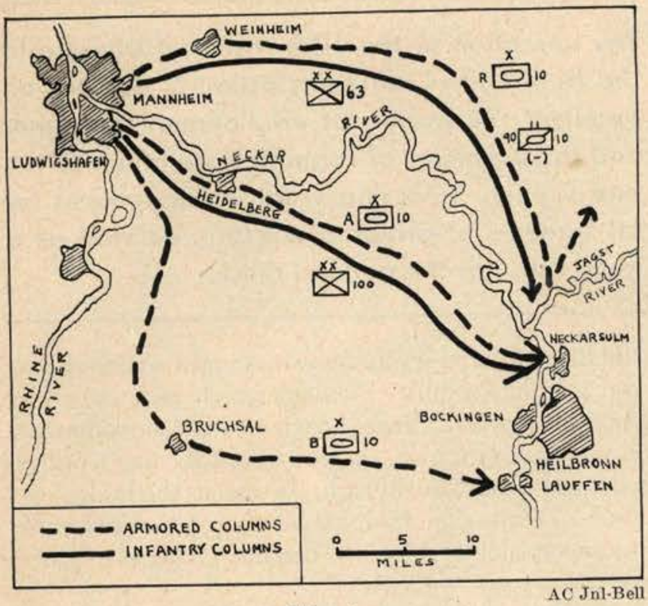
ABOUT

THE

AUTHOR

Robinson Studio

Captain George F. Hamel entered the Army as a reserve officer in 1941 following graduation from the University of Massachusetts. During the war he served with the 3d Cavalry Regiment and the 10th Armored Division, and at the time of the operation at Crailsheim was Executive Officer of the 21st Tank Battalion. He was integrated into the Regular Army in 1947 and was graduated from the Advanced Armored Officers Course in 1948. He is now assigned to the Plans and Operations Division, Headquarters, United States Army, Alaska.



AC Jnl-Bell

Map 1.

The terrain in the area also favored the defense. In addition to the many rivers which were formidable obstacles, the country was hilly and dotted with wooded areas, and the road net was generally poor, consisting mainly of secondary roads. The countryside was dotted with small towns and villages which made excellent defensive strong points, and were difficult to bypass because of the character of the terrain.

This unexpected enemy buildup caused VI Corps to change its plans on 4 April. The new plan of attack was as follows:

1. 10th Armored Division—attack to the east, seize and hold the line Rothenburg–Wettringen–Crailsheim–Schwabisch Hall, thereby cutting the escape routes from Heilbronn and surrounding the strong concentration of enemy troops attempting to hold the Neckar–Jagst line. The division was ordered by corps to attack in the following manner: CCR attack east from its present position, CCA to cross the Neckar north of Heilbronn and attack east, CCB to seize the bridge at Lauffen and advance to the east.

2. 100th Infantry Division (closed up along Neckar behind 10th Armored)—cross the Neckar River, attack east reducing Heilbronn, and continuing attack until all enemy troops in the area were destroyed.

3. 63d Infantry Division (following the 10th Armored astride the Neckar River)—force a crossing of the Jagst River near its junction with the Neckar, attack south until contact was made with 100th Infantry Division, then turn east and aid in the destruction of the enemy troops trapped in the area.

In order to put the plan into effect the following orders were issued by the 10th Armored Division on 4 April:

1. CCR—pass through the 63d Infantry Division on 5 April, attack east, and seize and hold the line Rothenburg–Wettringen.

2. 90th Cavalry—pass through the 63d Infantry Division on 5 April, and reconnoiter in force to the line Rothenburg–Crailsheim.

3. CCA—cross Bridge No. 2 when completed, and attack to the east to seize the line Crailsheim–Wettringen. See Map 2. Because of the precarious condition of the bridgehead at this time, CCA was also ordered to prepare alternate plans to cross on a bridge held by the 63d Infantry Division in the vicinity of Mossbach (Bridge No. 1), or over Bridge No. 3 in the event CCB was able to capture it intact. In any case the mission was to remain the same.

4. CCB—cross on Bridge No. 3 if captured intact, and attack to the east to seize and hold the line Schwabisch Hall–Crailsheim. Also to prepare alternate plans to cross on either Bridge No. 1 or No. 2, with the mission remaining the same. Because of the resistance being encountered, it was considered extremely unlikely that the bridge would be taken intact.

Throughout the day of 4 April, the situation remained fairly static with our forces advancing painfully slowly, and suffering heavy casualties from an enemy who was resisting bitterly. Several times during the day the 10th Armored Division requested permission from corps to cross CCA over Bridge No. 1 in order to keep up the momentum of the attack. However, corps refused because it believed that Bridge No. 2 could be completed on the morning of 5 April.

Since it had been necessary to reinforce the bridgehead troops with more elements of the 100th Division, the bridgehead was removed from 10th Armored Division control during the day.

II

5 April

The Attack Regains Momentum

A. CCR and 90th Cavalry Squadron.

The 90th Cavalry moved out from the vicinity of Waldmulbach at 0600 on 5 April followed by CCR, which had assembled in the vicinity of Adelsheim. After passing through the 63d Infantry Division, the 90th moved rapidly, and by 1000 had reached Assamstadt, after encountering practically no resistance on the way. The squadron immediately deployed, and established contact with what seemed to be an enemy MLR along the line Althausen–Stuppach–Rengershausen.

CCR passed through the 90th Cavalry in the north at 1430 and quickly seized the towns of Stuppach and Hachtal, while the 90th cleared Rengershausen and developed considerable resistance at Dorzbach. As usual, what resistance was encountered centered around roads and towns, and consisted of enemy infantry armed with small arms and panzerfaust.

At 2100, both units were ordered by division to stop and consolidate their positions for the night. At this time their line ran generally Assamstadt–Rengershausen–Hachtal–Stuppach. During the night, CCR positions were attacked by small groups of SS troops from Bad Mergentheim and Rothenburg.

B. CCA.

The combat command, assembled in the vicinity of Biberach, was notified on the morning of 5 April by division that the construction of Bridge No. 2 had not as yet been started. CCA was ordered to have one task force ready to move on fifteen minutes' notice to cross Bridge No. 1 and attack southeast toward the CCA objective. The remainder of the combat command was to follow as soon as possible. Shortly thereafter, permission was obtained from corps to cross Bridge No. 1, but the CCA objective was changed to seizing and holding the line Crailsheim–Backnang.

CCA moved out at 1130 in the order TF Hankins, TF Riley, and TF Roberts. The plan was for TF Hankins to lead to Crailsheim, then for TF Riley to pass through and turn west toward Schwabisch Hall while Hankins blocked the shoulder at Crailsheim.

TF Hankins contacted CCR and the 90th Cavalry in the vicinity of Assamstadt at 1830 after a march of more than 45 miles. It was necessary for the task force to stop here to refuel and to coordinate the passage through the 90th Cavalry lines. At 2000 TF Hankins passed through the 90th Cavalry at Rengershausen and began the drive toward Crailsheim. This was made extremely difficult because of the poor road net in the area, and because it was accomplished during the hours of darkness. Immediately after leaving Rengershausen, Hankins ran into a road block. A bypass was soon found but the task force moved very slowly throughout the remainder of the night 5-6 April, being hampered more by the terrain than by enemy action. The roads had become hardly more than trails and were nearly impassable for armor. At daylight he was still attempting to get through the bad stretch of road south of Rengershausen.

Upon reaching Assamstadt, TF Roberts was ordered to reconnoiter a route to the west of Hankins, in an attempt to bypass him and keep the attack moving. However, TF Roberts was held up by a heavily defended road block north of Dorzbach, and spent the remainder of the night attempting to find a bypass around it.

TF Riley and CP of CCA were assembled at Assamstadt, with Riley prepared to follow either Hankins or Roberts, depending on which task force broke through first and began to move.

C. CCB.

Although division recommended that the entire 10th Armored be crossed over Bridge No. 1, CCB was detached from the division and placed under control of VI Corps on the morning of 5 April. CCB was ordered to clean up remaining resistance west of the Neckar River in the corps zone, and to be prepared to pass through the 100th Infantry Division as soon as its bridge was completed. It was then to attack east to join other elements of the 10th Armored in cutting off the German troops in the area.

III

6 April

Exploitation and the Start of Enemy Infiltration

A. CCA.

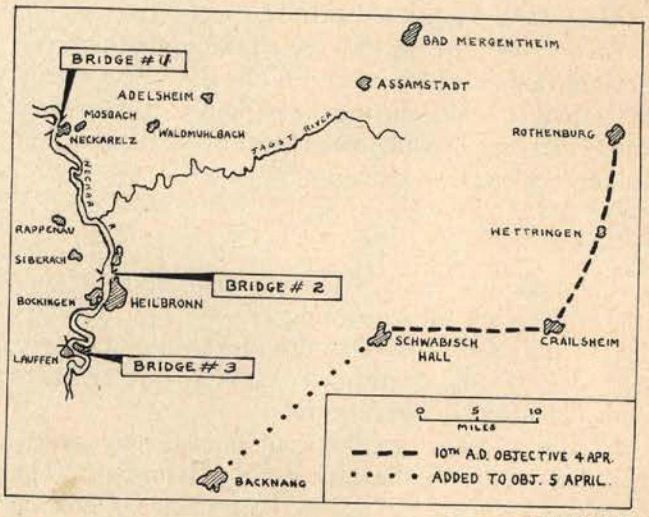
TF Hankins broke loose on the morning of 6 April, after finally passing through the poor stretch of road, and drove rapidly to the southeast overrunning the moderate resistance that stood in its way. The resistance encountered consisted of a few road blocks at the towns along the route. These blocks were defended by small enemy groups equipped with small arms and panzerfaust. At 1745 the TF entered the outskirts of Crailsheim after driving a distance of 22 miles!

TF Riley followed Hankins and one of its teams entered Crailsheim at 2100. Both task forces spent the night consolidating and resupplying. TF Hankins and one team of TF Riley were in Crailsheim, while the remainder of Riley's force was in Sattelweiler and Satteldorf. During the day, TF Hankins had captured more than 200 prisoners.

TF Roberts was held up most of the day by road blocks and heavy enemy antitank, artillery, and small-arms fire, both from Dorzbach and from the south side of the Jagst River. However, Dorzbach was taken before evening.

At 2200, CCA received orders from division to continue on its mission, protect the east flank of its own advance, and hold the shoulder at Crailsheim until relieved by CCR. In order to carry out these orders, the CCA plan was to have TF Hankins block at Crailsheim while TF Riley passed through, turned west, and continued toward the division objective.

However, the CP of CCA had remained at Assamstadt, and radio contact with the troops in the vicinity



AC Jnl. Bell

Map 2.

of Crailsheim had been lost early in the afternoon, so that these orders did not reach the advance elements that night. Repeated attempts were made to reestablish communication through the use of relay stations, but these were only partially successful.

During the night of 6-7 April, it became apparent that the enemy had no idea that the Crailsheim area was occupied by American forces. Outposts of TF Hankins at Crailsheim captured several command vehicles which were travelling toward the town. Prisoners, when questioned, said they were amazed to find American troops occupying the town.

Another incident occurred at Satteldorf which proved that the enemy was oblivious at this time to the existence of a force in his rear. A German army bus had somehow been allowed to pass unmolested through the outposts during the night, and was stopped in front of the CP of TF Riley by the S-4 of the task force When questioned, the occupants said that they had been sent to pick up their division's laundry, and were driving along with no expectation of meeting American troops. Needless to say, they were immediately relieved of their mission.

B. CCR and 90th Cavalry Squadron.

It had been planned to have CCR and the 90th Cavalry follow CCA, but because of enemy activity in the area, the mission was changed during the day of the 6th, and both units were ordered to hold the northeast shoulder of the division zone, until relief could be accomplished by other forces.

Both forces were subjected to increasing enemy pressure throughout the day. Before daylight, approximately 150 enemy SS troops infiltrated into Stuppach. In doing so they cut off, and killed or captured, a portion of our troops which were occupying the town. Troops from both CCR and the 90th Cavalry were engaged in severe fighting most of the day before Stuppach was retaken late in the afternoon. About 35 prisoners were captured in the action and 75 bodies were counted in the town. The remaining enemy withdrew to the north toward Bad Mergentheim.

Also, in order to improve the blocking positions, the town of Roth was cleared during the day. The enemy harassed all outposts during the night 6-7 April, mainly with small patrols which were continually probing and feeling out our dispositions.

C. CCB.

Throughout the day, CCB was engaged in its mission of clearing the remaining enemy from the west side of the Neckar River south of Heilbronn. However, at 1645 the combat command was returned to 10th Armored Division control.

CCB was ordered to disengage immediately, assemble, and march to the vicinity of Assamstadt. The Combat Command was assigned the mission of holding open the MSR's between Bad Mergentheim and Crailsheim, and Dorzbach and Crailsheim, and of relieving CCR and the 90th Cavalry in their blocking positions. This necessitated disengaging from the enemy under the constant pressure of enemy artillery fire from east of the Neckar River, marching over 70 miles at night over poor roads, and being committed immediately upon arrival. This was accomplished during the night of 6-7 April.

D. Short Recapitulation.

It would perhaps be well to stop at this point and recapitulate briefly what the division had accomplished in its enveloping movement. In less than 36 hours the division had moved over 70 miles and was positioned 35 miles behind the German lines. It had captured more than 300 prisoners and killed many more, and had destroyed or captured large amounts of enemy equipment. Because of the speed of the attack, this had been accomplished at small loss to our own troops.

In capturing Crailsheim, the division had grabbed the key point of the triangle formed by the cities of Heilbronn, Bad Mergentheim, and Crailsheim. Elements of the division were now located only 40 miles southwest of Nurnberg and 95 miles northwest of Munich. As we shall see later, this was to cause a major change in German tactics.

IV

7 April

The Start of Enemy Reaction and Buildup

A. CCA.

During the night of 6-7 April, small enemy groups had infiltrated the route between the forward elements of TF Roberts and the rear elements of TF Riley. Thus the MSR, from the vicinity of Hollenbach to Crailsheim, was cut for the first time. It was to remain cut, for all practical purposes, throughout the remainder of the operation. The only traffic on this road was by task forces fighting their way through. This was to be a major factor in stopping the American drive.

The terrain along this MSR greatly favored the enemy. It was composed entirely of secondary roads which wound their way through the rugged, hilly country. A greater part of the road was bordered on both sides by heavily wooded areas, and was dotted throughout its length by small villages which made easily defended strong points. Because of the fire placed from both sides on troops attempting to use this road, the MSR was nicknamed the "Rollebahn" (bowling alley), by the German troops in the area.

Both task forces in Crailsheim were reluctant to move out on the morning of 7 April. They had been out of communication with CCA since the night before, and the commanders were fearful of becoming strung out too far. As has been pointed out before, both units were far below normal strength, especially in the armored infantry element.

Also, the gasoline and ammunition supply in the units was fast becoming critical. The long march from Biberach to Assamstadt had used the major part of the fuel carried in the unit trains. Then the operation of 6 April had further depleted the fuel supply, and especially in the case of TF Hankins, there was also a shortage of ammunition. Although the remaining supplies carried in the trains had been distributed equally among the vehicles of the task forces, neither Hankins nor Riley had sufficient supplies for more than a few hours of combat operation. All trains had been sent to the rear for resupply, but because of the extended supply lines, it seemed unlikely that they would rejoin for some time.

In order to re-establish contact with the forward elements, the Commanding General of CCA flew to Crailsheim in a liaison plane at dawn on 7 April. Prior to leaving Assamstadt he ordered the immediate movement of TF Roberts, and the CP of CCA, to the Crailsheim area. Upon arrival at Crailsheim he ordered TF Riley to pass through TF Hankins, and he established a forward CP with TF Hankins until his own headquarters arrived.

TF Riley was late in moving out because of the absence of orders from CCA, and did not start the attack to the west until late in the morning. The task force attacked west toward Schwabisch Hall and by late afternoon had taken Ilshofen and Wolpertshausen. Only light opposition was encountered, coming mostly from troops covering the hasty withdrawal of a German corps headquarters from Ilshofen. The task force was strafed and bombed by a small group of ME 109 fighter-bombers near Ilshofen.

The lead team of the task force had the unique experience of sighting a railroad train moving down the track toward Crailsheim as the team attacked west out of the town. Tanks of the team waited until the train was close to their position, and stopped it quickly with a few well-placed rounds of cannon fire, after which they riddled the train with fire. This incident further proves the extent to which the Germans were surprised by the armored thrust in their rear.

As the task force reached Wolpertshausen a liaison plane reported a bridge intact across the Kocher River at Croffelbach, and a team was sent out to take it. The bridge at Croffelbach was set in a deep defile, and was blown just as the first tank raced up to it. The enemy immediately began to bring mortar fire on the bridge site, and enemy troops began to fire small arms and panzerfaust at the armored column from the high ground around the bridge. The tanks began to withdraw, but because the road was so narrow, there was no place to turn the vehicles around and they had to be backed out. The team was able to withdraw only after much difficulty. A medium tank in the column was actually knocked out by a panzerfaust shell, fired from the high ground, penetrating the top of the engine compartment! This illustrates the character of the terrain in the area. The team was finally able to withdraw from Croffelbach and was ordered to return to Wolpertshausen and reorganize and consolidate for the night. This proved to be the deepest penetration made to the west during the operation, and carried to within about five miles of Schwabisch Hall.

During the day, TF Hankins improved its defenses at Crailsheim and cleared the area surrounding the town. Several small villages were taken in order to give our troops better blocking positions. In the morning it also cleared the airport outside of Crailsheim, where 14 enemy planes were captured and destroyed.

Hq CCA and TF Roberts moved to Crailsheim during the day, encountering vigorous opposition along the way from the enemy which had infiltrated across the MSR. The column also received mortar fire, and was strafed several times by ME 109 and ME 262 (jet-propelled) fighter planes. Several vehicles were destroyed by enemy ground and air action.

The air attacks which were encountered on 7 April proved to be the forerunner of the large-scale attacks which were made throughout the area during the next three days.

B. CCB.

On 7 April, CCB cleared the triangle Bad Mergentheim–Dorzbach–Herbsthausen after some bitter fighting. Late in the afternoon the combat command, with TF Richardson leading, began to fight its way toward Crailsheim, in order to reopen the MSR and get the much-needed supplies to the troops there.

C. CCR.

The combat command had been ordered to disengage on the morning of 7 April, and proceed to Crailsheim to take over its assigned mission of relieving TF Hankins and holding the shoulder at Crailsheim. The blocking mission was taken over completely by the 90th Cavalry Squadron, until the positions could be occupied by CCB.

The increasing enemy pressure made the withdrawal hard to accomplish, and it was necessary to set fire to the town of Roth in order to disengage from an enemy force which was counterattacking our troops.

After assembling its force, CCR followed TF Roberts to Crailsheim, being harassed by enemy fire all along the route. It was impossible to relieve TF Hankins when CCR reached Crailsheim because of the shortage of supplies in the task force. Therefore, CCA was given operational control of CCR, and TF Thackston of CCR was given the mission of keeping the MSR open between Crailsheim and Wolpertshausen. It was still planned to have CCR relieve TF Hankins as soon as supplies reached the town.

D. 90th Cavalry Squadron.

The squadron was still blocking to the northeast, but was ordered to assemble as soon as relieved by CCB, and move to Crailsheim. From there, it was to follow CCA and hold the line Crailsheim–Schwabisch Hall, both exclusive, as soon as troops of the combat command had cleared it.

Late in the day, the 10th Armored Division CP moved to Assamstadt where it remained for the remainder of the operation.

V

8 April

Increased Air and Ground Pressure

A. CCA.

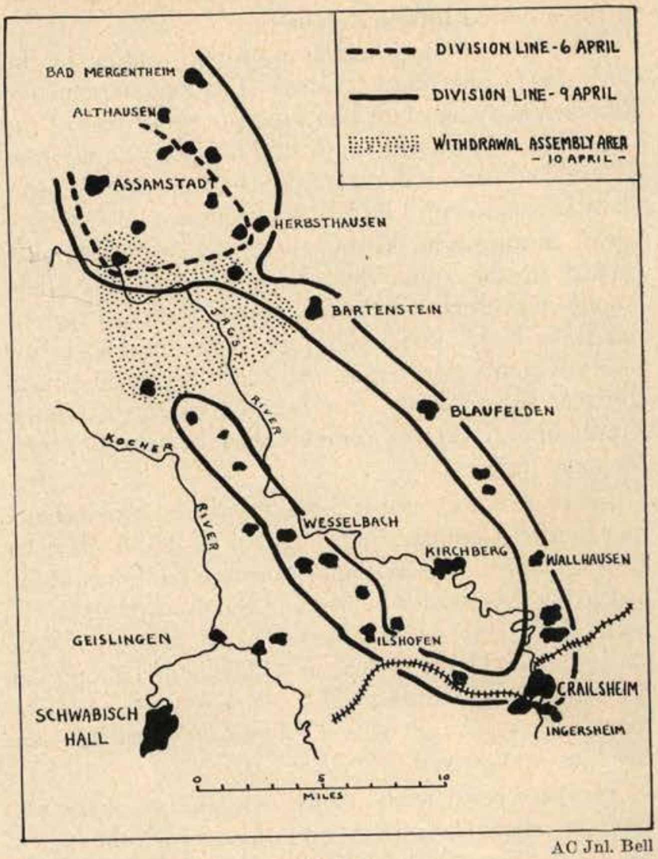
Crailsheim received its first major enemy counterattack at dawn, when an estimated 700 SS troops struck the defenses at several different points. The attack was preceded by a heavy barrage of nebelwerfer (rocket) and mortar fire. The enemy overran several of the outposts, penetrated the CP area of TF Hankins, and reached a point 150 yards from the CP of CCA before it was stopped. The attack was finally repulsed, after heavy fighting which lasted through most of the morning. Before noon the blocking positions were restored again.

It was still impossible during the morning to relieve TF Hankins. In addition to the supply situation, the fact that some portion of the perimeter defense of Crailsheim was constantly engaged with the enemy made any relief unfeasible. Therefore, TF Thackston remained on its road-clearing mission. As soon as elements of this force cleared a road, enemy would infiltrate behind them. For this reason, any movement of vehicles between Crailsheim and TF Riley was made only with armored escort.

However, TF Riley was ordered to continue to the west, and it was hoped that it would be possible to relieve TF Hankins sometime during the day, so that it could pass through TF Riley in the vicinity of Schwabisch Hall. Division authorized CCA to bypass Schwabisch Hall to the north if necessary, and ordered the combat command to disregard the mission of attacking toward Backnang from Schwabisch Hall. Instead the attack was to be made toward Heilbronn to contact the 100th Infantry Division.

Liaison planes reported that the bridge across the Kocher River at Geislingen was still intact, and a team of TF Riley attacked toward the town early in the morning. The team ran into enemy small-arms and panzerfaust fire at the edge of town. This was quickly overcome and the tanks raced to the bridge only to have it blown as they approached it. Since the supplies in the task force would only support a maximum of four hours' operation, the team was ordered back to Wolpertshausen to await further orders, instead of attempting to force a crossing farther to the north.

TF Roberts, meanwhile, had attacked to the north from Crailsheim to clear the area as far as the line Kirchberg–Wallhausen. This was ordered to improve the defensive positions held in the area, and also in the hope of contacting elements of CCB fighting south toward Crailsheim. This area was cleared by 1100 and the task force established blocking positions.



AC Jnl. Bell

Map 3.

Orders were received during the morning from the Commanding General of VI Corps to evacuate immediately all prisoners of war held in the Crailsheim area. Although it was considered extremely doubtful that vehicles could get through to the rear, a convoy was assembled in compliance with the order. All Class III and Class V supply trucks were assembled and the prisoners (about 550) were loaded on them. Troop A, 90th Cavalry Squadron, was assigned to escort the convoy to the rear, in the hope that they would be able to force their way through to contact TF Richardson of CCB. However, the column was ambushed in the vicinity of Blaufelden and forced to retire. A number of vehicles in the convoy were destroyed, and most of the prisoners either escaped or were killed.

The CG of CCA also recommended to the CG, 10th Armored Division, that at least one battalion of infantry and one of artillery be attached to CCR, if it was to be expected to relieve CCA at Crailsheim and hold the town.

Early in the afternoon CCA, seeing no promise of letup in the supply situation, requested that the troops at Crailsheim be resupplied by air. Division was also informed that CCA had sufficient supplies for only four hours' operation. The request for air resupply was approved and forwarded to higher headquarters, because of the slow progress CCB was making in its attempt to open the MSR.

Fortunately, the airport at Crailsheim had a fair airstrip (1300′ long by 40′ wide), which made an air ferry operation possible. The combat command engineers were immediately ordered to improve it, and by the end of the day had enlarged it to 2200′ long by 75′ wide.

Meanwhile, reports were received from enemy prisoners and civilians which indicated that an all-out effort to retake Crailsheim would be made that night. Because of the critical supply situation, and the depleted strength of CCA and CCR, the CG of CCA ordered all troops to halt and prepare to meet the impending attack. Plans made for the defense were as follows: TF Riley to set up a perimeter defense in the vicinity of Wolpertshausen, TF Roberts to hold the line Kirchberg–Wallhausen, and one team of TF Thackston to keep the routes west out of Crailsheim open, while the other aided TF Hankins in the defense of Crailsheim.

However, at 1545, orders were received from division which altered the plans somewhat. Division ordered that CCA push TF Roberts to the northwest between the Kocher and Jagst Rivers. The task force was to seize any bridge intact over the Kocher River, and also to gain contact with the 63d Infantry Division which was attacking south toward the 10th Armored positions. This move was ordered so that a supply route could be opened from the north. If TF Riley was unable to find a crossing over the Kocher in its zone, it was to follow Roberts, prepared to take advantage of any bridge seized by Roberts, and then continue its mission to the west to contact the 100th Infantry Division. These orders caused the withdrawal of TF Roberts and the task force assembled at Ilshofen. There, supplies were transferred among vehicles in an attempt to make at least a short attack possible. By the end of the day, TF Roberts was ready to move out on its new mission.

U. S. Army

Teamplay: 10th Armored tankers and infantry.

B. CCB.

This combat command was engaged throughout the night of 7-8 April and all day 8 April in attempting to open and keep open the MSR from Bad Mergentheim to Crailsheim. All available supply trucks had been placed in the column of TF Richardson, which was spearheading the attack.

Severe resistance, in the form of road blocks, small-arms, mortar, artillery, and AT fire was encountered all along the way. The enemy took advantage of the favorable terrain to resist to the last, and then withdraw; harass the body of the column, and close in behind the column, thereby cutting the road again. Also, the column was bombed and strafed throughout the day by ME 109 and 262 planes. By nightfall on 8 April, TF Richardson had just reached Blaufelden, and the badly needed supplies were still far from Crailsheim.

TF Chamberlain, of CCB, was following Richardson, and had the mission of keeping the road open. This task force fought bitterly throughout the day, and faced the almost insurmountable task of keeping the road open with a small force, in the face of constantly infiltrating troops. The road was kept open only when an armored column was fighting on it.

C. 90th Cavalry Squadron.

The 90th Cavalry was still holding the northeast shoulder of the division positions generally along the line Stuppach–Hachtal–Roth. However, the squadron was informed by division that it would be relieved by the 117th Cavalry Squadron, as soon as XXI Corps moved up abreast of VI Corps. The squadron was then to proceed rapidly to Crailsheim to take up its positions along the line Crailsheim–Schwabisch Hall. This relief was finally accomplished on 8 April, and by nightfall the squadron was assembled at Roth prepared to proceed to Crailsheim.

At 1800, the 324th RCT of the 44th Division was attached to the 10th Armored, and given the mission of relieving TF Chamberlain and holding the sector of road from Bad Mergentheim to Blaufelden. CCB was then to keep the MSR open from Blaufelden to Crailsheim with one task force, while keeping the remainder of the combat command in mobile reserve in the vicinity of Kirchberg.

Enemy air activity grew in intensity throughout the day, and was by far the greatest enemy air effort ever seen by the division. Small groups of fighters, both conventional models and the swift-darting, jet-propelled planes attacked troops in the entire division zone. Columns along the road and moving cross country, and artillery positions bore the brunt of the attack. Crailsheim itself was attacked again and again during the day, but the remaining towns in the area were not bothered much by the enemy air.

Repeated requests were made for air attacks on German troop concentrations and enemy planes. However, there was little friendly air available, and the enemy air force was operating practically at will, hampered only by fire from antiaircraft and other ground units.

VI

9 APRIL

CONTINUED ENEMY PRESSURE AND RESUPPLY FROM AIR AND GROUND

A. CCB.

At 0500, TF Richardson finally broke through to Crailsheim with the sorely needed supply vehicles in his column, after fighting for two nights and a day to get through. The task force had suffered heavy casualties in vehicles and men during this period, and several of the supply vehicles had also been destroyed by enemy fire. TF Roberts, which was moving out on its new mission, was halted and all of its vehicles were resupplied.

For most of the day, CCB attempted to keep the MSR open from Herbsthausen to Crailsheim. The difficulties involved in this have been discussed before, and CCB was spread so thin along the way that even the CP of CCB held a sector of the road in the vicinity of Rot-Am-See. Late in the afternoon the 324th RCT completed the relief of TF Chamberlain from Herbsthausen to Blaufelden.

B. CCA.

The counterattack which had been expected at Crailsheim did not materialize, although a heavy predawn barrage of nebelwerfer and artillery fire was laid on Crailsheim, Ilshofen, and Wolpertshausen. Several direct hits were scored on CP of CCA, demolishing the building, and forcing the movement of the CP by infiltration to another part of the town. Also, Crailsheim was bombed and strafed at 0630 by ME 109 and 262 fighter-bombers, and was shelled intermittently throughout the day. This early morning air attack was the first of many received throughout the division zone on 9 April.

TF Roberts attacked to the northwest early in the morning, followed initially by TF Riley. Although small pockets of resistance were encountered, TF Roberts advanced rapidly, overrunning all enemy in its path. At 0700, both forces were attacked by an estimated 25 enemy planes, which bombed them, and strafed the columns with machine-gun and rocket fire.

TF Riley branched out on a parallel route at Dunsbach, and the two task forces pushed to the northwest throughout the day, attempting to contact the 63d Infantry Division, and also to capture a bridge over the Kocher River. By evening they had advanced 14 miles to a position south of Hermuthausen, where contact with the 63d Infantry was imminent.

TF Thackston had been ordered to keep the routes open between Crailsheim and the forward elements of CCA, and was occupied throughout the day in accomplishing this mission.

CCA was notified in the morning that the first air resupply would be attempted on the afternoon of 9 April, and that approximately 25 C-47 cargo planes, with fighter escort, would land at Crailsheim in the afternoon, loaded with Class I, III, and V supplies. Immediate plans were made to receive the planes and unload the supplies, and it was planned to evacuate by air the most seriously wounded of the casualties in the area. Coordination between ground and air was effected by marking the corners and sides of the airstrip with white and cerise panels. When the planes appeared over the area a smoke pot was burned to indicate wind direction to the pilots.

The first of the planes landed at 1715 while P-47 fighter planes flew cover over the airfield. The unloading of supplies and loading of casualties was made extremely difficult by enemy ground and air action. The airfield was less than 1000 yards from the front and a constant hail of mortar fire was placed on the field during the operation. Also, enemy jet-propelled planes flew in under our air cover to bomb and strafe the field. There were several casualties among the personnel engaged in unloading and loading the planes, and one C-47 was destroyed on the ground by enemy action.

Another group of C-47 planes landed the next day with more supplies. During the two-day air resupply, 60 cargo planes landed at Crailsheim, and delivered a total of 20,000 gallons of gasoline, 7000 operational rations, 1000 rounds of 105mm ammunition, and 100,000 rounds of small-arms ammunition. A team of TF Thackston protected the airfield during the resupply.

Also, division liaison planes flew in medical supplies (mainly plasma), and additional medical personnel during the day.

C. 90th Cavalry Squadron.

The reconnaissance squadron moved rapidly from Roth to Crailsheim during the day, arriving in the town late in the afternoon. The column had been fired on all along the "Rollebahn," but because of its speed of movement, had suffered only light casualties.

Upon arrival at Crailsheim the squadron was attached to CCA, and was immediately disposed, as follows, to bolster the defenses in the area: one troop holding a sector of the defense at Crailsheim itself, one troop to aid TF Thackston in holding Ilshofen and keeping the road open between Crailsheim and Ilshofen, one troop to keep the road open between Crailsheim and Satteldorf, and one troop held in mobile reserve.

At the end of the day, reports were received that there was a buildup of enemy troops in the woods east of Crailsheim. The force was estimated to be about

3000 men, and their mission was to retake Crailsheim and Ilshofen on 10 April. All troops were awaiting the attack at the end of the day.

VII

10 April

Withdrawal

At 0430 on 10 April, the enemy made his greatest bid to retake Crailsheim, by attacking the town with an estimated 600 men from the southeast and northeast. The enemy penetrated the defenses of TF Hankins, and bitter hand-to-hand fighting raged through the streets of Crailsheim during the early morning hours. At 0600, CCA notified division that it could not receive the supply planes until the attack had been repulsed. By 0830, the enemy were finally driven out of the section of town which they occupied.

At the same time, elements of TF Thackston, which were holding Ilshofen, were attacked by a force of 100 men supported by three self-propelled guns. This enemy force was completely annihilated, all men being killed or captured.

All available reserves were committed in these actions, and it became apparent that if the Crailsheim area were to be held, reinforcements would be required. It was feared that the counterattacks would continue growing in intensity, and that the troops at Crailsheim, which had been far below strength at the start of the operation, and had been further depleted by heavy losses since, would be unable to withstand them.

Therefore, the Commanding General of CCA again requested that infantry reinforcements be sent to Crailsheim. He also stated that if VI Corps desired to hold Crailsheim, it would have to attack through CCA in force that day to destroy the enemy troops which were concentrated around the town.

The message to hold the planes back until the counterattack was over was not received in time, and the second group of cargo planes began landing at 0630. The airport had been held as a result of a special effort by the troops in the area, and the resupply was accomplished despite the heavy fire that was being brought on the field at the time.

During the morning, TF's Roberts and Riley, which had been attacking throughout the night, contacted elements of the 63d Infantry Division west of Hermuthausen, and were ordered to stop pending further instructions. The routes from CCA to these forces had been cut by enemy infiltration, and both task forces were temporarily detached from CCA and placed under divisional control.

At 1030, corps decided to withdraw the troops from the Crailsheim area. This decision was reached because of the constant enemy pressure at Crailsheim, and because there were insufficient troops in the corps to properly support the 10th Armored Division in holding the area. Division was ordered to withdraw the troops at Crailsheim to an assembly area to the north, and be prepared to cross the Kocher River on 11 April and attack west toward Heilbronn.

The 324th RCT was relieved from attachment to the 10th Armored Division and VI Corps and was attached, in place, to XXI Corps.

The following plan was made to accomplish the withdrawal. Troop A, 90th Cavalry Squadron was detached from CCA and reverted to squadron control. CCB and 90th Cavalry were ordered to cover the withdrawal of the troops in the area, and then to withdraw over the "Rollebahn" to the division assembly area.

As soon as 90th Cavalry had completed the relief of CCA, the Combat Command began to withdraw, following the route taken by Task Forces Roberts and Riley. CCB and 90th Cavalry were able to cover the withdrawal effectively, although the enemy was constantly infiltrating throughout the area, especially in the vicinity of Ilshofen. These troops then withdrew to the division assembly area during the night of 10-11 April, bringing to a close the bitter fighting in the Crailsheim area.

VIII

Results of Operation

At this point, I should like to review the results of the Crailsheim operation, both from our own and the enemy point of view.

The division captured approximately 2200 prisoners during the operation and killed an additional 1000 Germans. Also, an extremely large amount of enemy equipment was destroyed or captured during the action. This was accomplished at a cost to the division of 11 officers and 316 enlisted men killed, wounded, or missing. Among those killed were the commanding officers of the 10th Armored Division Artillery, 93d Field Artillery Battalion, and Task Force Roberts.

The operation disrupted vital German rear communications and diverted large enemy forces from making a main effort elsewhere along the front. The importance that the enemy placed on this operation can be judged by the determined counterattacks he repeatedly launched throughout the area, and by the fact that he committed nearly 12,000 troops in an effort to retake the Crailsheim sector. The pronounced effect the operation had on German tactics is illustrated by the following quotation taken from Order of Battle Reports:

> The surprise capture of Crailsheim and its four-day defense by the 10th Armored had at least four outstanding and far-reaching effects on German tactics.
>
> 1. Two German divisions were withdrawn from the defense of Heilbronn and moved out of what

must have appeared to the Germans as the beginning of an American encirclement of that area when the first part of the wedge was driven south to Crailsheim.

2. The operation forced the commitment of two German divisions at a spot midway between the objective towns of Stuttgart and Nurnberg and left them uselessly there when the U. S. armor was able to disengage and strike further to the west. (U. S. penetration to the strategically important road and rail center was a surprise threat against Stuttgart, Nurnberg, and Munich itself, which the Germans could not afford to overlook.)

3. The move outflanked several rehabilitation centers which Germans had set up for divisions practically destroyed in the Rhine crossing.

4. The rapidity of advance split communications of the 9th V.G. Division in two, with battalion and regimental CP's on one side of the road and smaller units cut off to the west.

More than 200 sorties were flown by enemy planes in the 10th Armored Division sector during the period 7-10 April. Although a few large groups of enemy planes attacked our troops, the attacks were made mainly by planes flying alone or in small groups. ME 109 planes usually flew in groups of four to six, while ME 262 (jet-propelled) fighters attacked singly or in pairs. At least nine of the enemy planes were shot down by tank and antiaircraft fire.

This constant attack by enemy air greatly hampered the movement of our troops. Also, the lack of friendly air in the area was a hindrance to the division. Although requests were made constantly to higher headquarters for friendly planes to attack air and ground targets, very few friendly planes were available until 9 April. Even then there were not enough American planes to properly support the division.

In describing an operation it is unfortunate that we often fail to give full credit to the supporting troops which are so essential in any successful operation. However, this was certainly not due to a lack of appreciation of the outstanding work performed by the supporting units of the division, both organic and attached. I have already spoken of the magnificent work done by the engineers at the airport in Crailsheim. This was typical of the excellent manner in which the engineers participated in the operation. They were busy constantly, erecting and reducing obstacles, clearing mined roads, etc., the greater part of which was done under enemy fire.

An indication of the indispensable part played by the artillery can be gained by noting a partial list of missions fired during the operation. Organic and supporting artillery fired 587 missions and expended 11,504 rounds of ammunition.

Despite the decision to withdraw the division from the area, the operation can certainly not be called a failure. In addition to the results already pointed out, the operation opened the way for the rapid drive by VI Corps to the Danube, the National Redoubt Area, and through Austria to the Italian border.

IX

LESSONS LEARNED

No study of a combat operation is complete or of value unless an evaluation is made of the good and bad features of it. The observations which follow are the personal opinion of the writer, arrived at after a study of all records available, and also from personal recollections of the operation. Any misconceptions which I may have received are due to the fact that my own experiences in the operation were largely confined to the operations of one of the task forces of the division. It is not always possible to gain a complete knowledge of an operation from a study of records, and I may have missed some of the considerations which caused certain actions on the part of higher commanders. However, I shall list some of the conclusions arrived at from my study of this operation.

1. The whole division should have been crossed over the north bridge on 4 April when it became apparent that the enemy was planning to defend Heilbronn and the Neckar–Jagst line. Had this been done, I believe that the division could have quickly reached its objective. When an armored division is on exploitation it is important to keep up the momentum of the attack, and give the enemy no opportunity to set up a defensive line. Also, when an armored division is employed as a unit it is far more capable of utilizing fully its inherent characteristics of fire power, mobility, and shock action.

2. An armored division on exploitation must be followed closely by infantry which can consolidate and hold the ground that has been gained. It must be remembered that in this operation, VI Corps was hampered by a lack of troops, and had insufficient troops for an encircling movement. Also, the war was in its final stages, and many unusual risks could be taken. However, I believe that the Corps plan of sending an armored division out to seize and hold ground without provision being made to keep the supply routes open behind it, was tactically unsound.

An armored division without gasoline is of little value. It can hold ground but is not so well suited as an infantry division to go on the defensive. Of course, supply routes behind an armored division will often be cut, but infantry must be following close enough in the rear so that supplies can be pushed through when needed. I believe that the fact that an enemy who was already beaten could effectively stop an armored drive, offers us a good lesson in the future employment of armor. Had the division been facing an enemy who was well equipped and in excellent condition, I have no doubt that unless reinforced it would have been annihilated.

3. Air resupply of an armored division can be extremely effective under certain conditions. Naturally, in this instance, the airport in existence at Crailsheim made an air ferry operation possible. However, the fact that it was quickly enlarged demonstrates that a great deal of improvisation is possible. Also, this operation was carried out while enemy fire, both from ground and air, was being placed on the field. It is believed to have been carried out closer to the front lines than any other air ferry operation during the war. In any future war, similar resupply missions will probably be common. The pilots won't like it, but it can be done.

4. All commanders must be well forward where they can see the situation and influence the action. In this operation the corps commander never visited Crailsheim. The Command Post of the 10th Armored Division remained at Assamstadt, and the Commanding General did not visit Crailsheim until 10 April when he issued orders to withdraw. If the higher commanders had seen for themselves just how critical the situation was, some of the orders issued would undoubtedly have been changed. An example of this was the insistent and repeated order from Corps to evacuate all prisoners in the area when it was evident that no convoy could get through.

Another example was the continuous urging from Corps to continue the attack to the west when the lack of supplies, and enemy action, made such a move unfeasible. Had CCA become any more strung out it would have probably been destroyed in detail.

5. A combat command commander must always keep his command post up with his forward units. An illustration of failure to do this occurred on 6 April when CCA CP remained in Assamstadt and lost contact with its forward elements. The result was that no one moved on 7 April until contact was reestablished. I believe that this was the only serious error made by the Commanding General of CCA. His masterful handling of the situation at Crailsheim is evident in even a quick study of the operation. At one time he had the whole division under his command with the exception of CCB.

6. Armored commanders must be aggressive at all times. An example of lack of aggressiveness involves the same situation given above—when the forces at Crailsheim did not move out on 7 April. Granted the supply situation was almost critical, there was danger of becoming strung out too far, and there was no communication with higher headquarters. However, the order had been given before, that TF Hankins was to block at Crailsheim while TF Riley turned west, and there should have been no doubt as to what to do.

7. A reconnaissance unit, when properly employed, is a highly valuable and effective force. I know of no other armored division operation where the reconnaissance squadron performed more of the missions that are visualized for it. During the operation, the 90th Cavalry Squadron was assigned, and successfully accomplished, all of the following missions: exploiting on a separate axis of advance; protecting a division flank; holding a sector of a defensive position; escorting supply convoys; keeping roads open; and covering the withdrawal of the division. It proved to be invaluable as an economy force.

These are only a few of the combat lessons that can be learned from this operation. Further study of the operation should be invaluable to all armored commanders, because of the peculiar nature and the many good and bad features of the April campaign at Crailsheim.

THE INVASION PIPELINE

Lightweight 6-inch pipe which helped solved the gasoline supply problem for General George S. Patton's armored divisions in their rapid drive through France is still breaking records.

The same pipe which army supply troops once laid across France is now being used to carry crude oil to the refinery from newly drilled oil wells in California's isolated Cuyama Valley, scene of the West's richest oil strike in twelve years.

Last spring, when the first gusher boomed in, oil men pondered the question of how to get the fast-flowing oil to waiting markets. The Cuyama Valley, a barren mountain basin midway between the coastal city of Santa Barbara and the southern San Joaquin Valley, is some thirty-five miles from the nearest trunk line which might carry the oil to a refinery.

An agent for the company involved saw the lightweight pipe for sale in a Texas supply house, which had purchased it at an army surplus sale. The agent bought all the pipe he could get and shipped it to California.

Contractors hired to lay the pipe broke all records in completing the job. Within ten days over thirty-five miles of pipe had been welded into a steel artery which circled up and down over hills from the new oil field to the main trunk line at Maricopa, Calif. No attempt was made to bury the pipe as the company regarded it as a temporary expedient.

Many of the oil workers who helped rush the project to completion were veterans who had seen identical pipe—in some instances it might have been the same pipe—while serving overseas. They christened the artery the "invasion pipeline."

Today, while the Cuyama Valley oil field is taking its place in the forefront of California's rich oil fields, the invasion pipeline, veteran of valuable service in France, is doing an important job in a country at peace by speeding oil to the refinery and the public.—William T. Rintoul.

LETTERS to the Editor . . . .

THE GUDERIAN ARTICLE

One side

As a subscriber to the Cavalry Journal down througn the years and now of the Armored Cavalry Journal, I should like to comment upon the propriety of the article, *Armored Warfare*, appearing in the January-February issue.

To me, your writing General Heinz Guderian requesting his preparation and the subsequent publication of this article was in appallingly bad taste. This lionizing of former German officers—and scientists too—who in an enormous measure were responsible for the most widespread suffering the world has ever known displays a total lack of sense of values. It is closely related to that same type of stupidity—an inordinate sympathy for the poor misunderstood German nation—that contributed so generously between World Wars I and II to the renaissance of the German military machine with its resurgence as a powerful factor in an almost successful effort to enslave the civilized world. A military machine—I might add—ruthless, cruel, barbarous, and unprincipled. I suggest that you carefully scrutinize the photograph of General Guderian accompanying his article. This requesting that he prepare an article for the Journal is to my mind quite different from interviewing gentry of the defeated German Army as no doubt was done by Liddell Hart in gathering material for his book, *The German Generals Talk*. Too I beg of you not to forget that it was these same gentlemen who were responsible to a great degree for the design of the present Red Army—and many of whom are still in the employ of the U.S.S.R. aiding in developing the armed forces of a nation of which the proven objective is the destruction of the democratic nations as such. We need not embrace in the brotherhood of arms the gangsters of this profession no matter how great their prowess or proficiency.

You debase your Journal in catering to one of the surviving military leaders of a former government totally bankrupt in honor or integrity. A plenitude of data on German armor and its employment is most assuredly available in the military archives of the democratic nations. As to General Guderian's article itself I found no information that should not already be in the possession of any first-class officer *au courant* with present-day weapons and the technique of their employment.

I trust that you shall be forthright enough to publish this letter.

Colonel A. Vincent Wilson,
Corps of Engineers Reserve.

Pasadena, California.

And the other side

I have been receiving the Armored Cavalry Journal for several years. As an ex-cavalryman and a student of military affairs (and an occasional contributor to your columns) may I say that I regard the Armored Cavalry Journal as one of the best military magazines on the market; and I should like to comment on the especial excellence of the January-February 1949 number.

Trends in Tank Development by Colonel Heiberg is a most important contribution and deserves the full attention of those responsible for the design and purchase of tanks in all countries. Too often in the past the unbridged abyss between the technical designer and the man who has to fight the vehicle has led to disaster. Perfection of design is useless unless the design is based upon sound tactical requirements. The habit common in all armies of purchasing the equipment first and then building the organization around it is a dangerous one, as your late General Chaffee knew only too well.

Garrett Underhill's *The Story of Soviet Armor* is the first complete survey of this interesting subject which I have seen, and I look forward to the later sections of this article. In that connection, General Fuller, the British military writer, has something to say about tanks in the Russian Civil War in his book *Watchwords*. As one of the earliest tank experts, General Fuller was closely associated with the tank side of British "intervention" in the Russian struggle.

Colonel General Heinz Guderian has given another outstanding contribution to the Journal with his article *Armored Warfare: Considerations of the Past and Future*. It should not be forgotten that one of the reasons for Germany's defeat was *not* inferiority in armored employment! There can be no greater experts on armored tactics than the German panzer commanders, of whom Guderian is the most outstanding. While the British had extensive experience in tank war only in the Western Desert and in France-Germany, and the Americans had little experience outside the French-German theater, the German panzer leaders obtained practical lessons of tank-action in France, Africa, the mountainous Balkans, and the steppes and forests of Russia, and it is from them, therefore, that the most can be learned.

Incidentally, it was a "scoop" for the Journal to get General Guderian's article, but I think it is only fair to point out that *An Cosantoir: The Irish Defense Journal* was the first in the field as regards articles by German generals. As I write, four articles have already appeared—by General Dittmar of the Finnish war of 1941-44: by General von Senger und Etterlin, commander of the 14th Panzerkorps at Cassino, on the Cassino battles of 1943-44; and by General Blumentritt on Operation Sealion, the plan to invade Britain in 1940, and on the battle of northwest Germany in 1945, where in rapid succession Blumentritt commanded the 25th German Army, the 1st Parachute Army and Armee Blumentritt. This series will be continued, it is hoped, with articles by General von Tipplesкirch, General Siewert, Colonel General Student, Admiral Engel, *and* by General Guderian. The articles in *An Cosantoir* are usually of a historical nature and although the authors all suffer from a lack of records, documents, etc., they are able to give very clear and interesting pictures of "the other side of the hill."

In conclusion, I should like to tell you that the Armored Cavalry Journal has an extensive readership in the Irish Army, and in the Command and Staff and Infantry Schools (as well as the Cavalry School) material from the Journal is often used as the basis for tactical studies, test talks, etc. Since the dollar shortage makes copies of the Journal comparatively rare on this side of the Western Ocean, copies from my own set are often borrowed—but, unfortunately, less often returned—by student officers attending courses.

Captain Fergus N. Fitz Gerald.

Dublin, Ireland.

[*If the* Journal *position on the Guderian article hovered in the middle area, the effective statement of his case by Colonel Wilson might result in a consideration to line up on his side of the fence. However, we continue to subscribe to the reasons which prompted our original request; a request to an outstanding expert on armor, not to an enemy or political opposite. It is our strong feeling that this is an objective contribution to the military history of the time, and something of great significance to our arm. Further, we do not recognize any political implications in our request for or publishing of the article. To disagree politically should not be cause to disregard militarily. Certainly it is imperative that we have the fullest knowledge of and about "those ruthless, cruel, barbarous and unprincipled military machines," whose execution of war is no less effective because of the characteristics which inspire it. Quite apart from the morals of the case, we support the Guderian piece as a worth-while contribution to our medium, the professional military field, whose business is the fighting of wars—and, conversely, the maintenance of peace. Only through complete knowledge can we expect to successfully acquit our mission. A part of that mission as we see it is the frank discussion of both sides of a picture. We thank Colonel Wilson and Captain Fitz Gerald for such able presentations of diverse views.*]

INTEREST FROM TOPSIDE

Material of value

I feel that the Jan.-Feb. Journal is the best issue that we have received in the past several years. Of outstanding interest to the reconnaissance personnel of the 11th Airborne Division was Colonel Reed's article, *Armored Cav-*

alry Light. Of equal interest to the airborne cavalryman was Corporal Middleton's *Light Armor in the Airborne Role.* Both of these articles were widely read, and have been the point of departure for many discussions within our organization. Because of the noticeable improvement in this last edition, I have again joined the ranks of subscribers to the ARMORED CAVALRY JOURNAL.

LIEUTENANT ROBERT F. M. DUNCAN,
Reconnaissance Platoon,
11th Airborne Division.
APO 468, San Francisco.

[*We call Lieutenant Duncan's attention to General Byers' article in the September-October issue of the* JOURNAL, *and to the lead article in this issue.*]

PICTURES ARE IMPORTANT . . .

. . . And also expensive

I have the January-February issue of the ARMORED CAVALRY JOURNAL at hand. It is a very much improved publication. It puts more emphasis on visual education, which is important in these days of advanced presentation. I have truly found that a picture is sometimes as important as a thousand words. World War II proved to me what a person with sketching ability, a blackboard, a piece of chalk and some instructional material (including service journals) can do in holding the attention of some 150 indifferent GI's sweating out the subjects of the inclement weather schedule. I am in favor of more pictures, sketches and diagrams.

With the emphasis on dispersion and movement in any future conflict, you might include an occasional semi-fictional story on cavalry tactics of the past, from about the Civil War period up to the present. I would like to see an occasional article on the cavalry of other countries, past as well as present. Sketches would add to their interest.

I am enclosing my postal note to cover renewal to the JOURNAL for a two-year period.

GEORGE A. LUTOMSKI,
Ex-Staff Sergeant Infantry.
Milwaukee, Wisconsin.

[*We are in hearty accord with Reader Lutomski on the sketches, maps and pictures angle. To indicate the limiting factors involved in makeup of a magazine, his $6.00 postal note for a two-year subscription will exactly meet the bill we will receive from Wide World Photos for a single reproduction right to the photo of Vice Admiral Jaujard, appearing on the Defense Pact article, on page 7. Or, that same six dollars would just about pay for the cut cost of the photo heading up the first article in this issue. The more subscriptions, the more readable the magazine.*]

MENTAL TELEPATHY?—OR,

. . . The Journal comes through!

I was Asst. Battalion Surgeon in the 54th AIB of the 10th Armored Division from Bastogne to the end of the war at Garmisch-Partenkirchen. During that period we were relatively completely occupied. Then a bad thing happened! Just as we were beginning to talk over our battles and try to fit together the big picture—the division split into a million pieces and literally nothing remained. What had been a large, proud, and very able fighting organization vanished in a few weeks without leaving a trace!

I traced out a publisher in Georgia who was getting together a history and I even sent him money, but it fell through and he sent back my check. I have traced about a half dozen of my companions but that is all.

Therefore, when one of my patients the other day brought a copy of your JOURNAL to the hospital to while away his hours, he didn't stand a chance. I grabbed it. Your article "First Blood" brought back memories in every paragraph.

Consequently, I am enclosing $3.50 for a subscription to the JOURNAL. And to that may I append my suggestion for several worth-while historical articles on the 10th Armored Division? How about the crossing of the Saar and the capture of Trier? That ought to satisfy all your readers. How about the 10th at bay at Crailsheim? There are plenty more, but those are good beginnings.

Also, you have probably printed considerable about the 10th already; and undoubtedly a great deal about Bastogne, Metz, the push to the Rhine, etc. I would be much obliged if you would send titles of any such articles so that I may order past issues.

ROBERT P. SMITH, M.D.
Burlington, Vermont.

[*Doc Smith, being a doc, may have telepathic powers that we don't possess; however, he will be glad to see The Crailsheim Operation of the 10th as our feature historical narrative for this issue. It's a bit longer than we like to use, but it was such an excellent story of armored division employment that we gave it the works. How about that, Doc?*]

AIR MOBILITY FOR THE MOBILE ARM

A compelling need

This is just a short note to tell you, as one of your readers, that I was very pleased to note the article by Corporal Middleton in your January-February issue. I hope that it will be a stimulus to others with armored combat experience to give serious thought to this matter of how to get the armor into the air. Few things, if any, are more important now than this problem of how to get the armored cavalry, by air, to the enemy's rear, where it belongs. Perhaps we use an improper terminology, for to say flying armor to some, conjures up visions of masses of heavy tanks which would be impractical to fly in numbers, while to say flying cavalry to others means flying horses, which is not what we are after either. What is really needed is to give air mobility to "the smashing drive and aggressive attitude" traditionally characteristic of the cavalry, as Corporal Middleton describes it.

I hope that the article is the forerunner of more like it and that our experienced armored soldiers will explore this challenging and new field, the one in which they will find their future and attain heights of combat achievement worthy of the greatness of American cavalry of the past.

I thought that Colonel Heiberg's article was very good also; factual, logical, and a very clear presentation of a complex problem.

MAJOR GENERAL JAMES M. GAVIN,
Headquarters Fifth Army.
Chicago, Illinois.

COMBAT NARRATIVES

I enjoyed very much the account of the 41st Tank Battalion in the November-December 1948 issue and need no further prompting in taking advantage of your request for battle experiences. My service was with the 741st Tank Battalion, and I would like to read about some of its actions so that a clear picture would be formed of just what happened.

The 741st landed at H-hour on Omaha Beach in support of the 16th Infantry and in support of the Second Infantry Division fought its way to Tinchebray, France. It then moved across France and Belgium and hit the Siegfried Line. One of its officers received the Distinguished Service Cross by yanking out the dragon's teeth with point-blank fire. Again it was, in December 1944, with the Second Infantry Division, when it held the towns of Rocherath-Krinkelt, on the northern shoulder of the Bulge. Here is an action for which A, B and C Companies received the cluster to the Unit Citation, for beating off all German attacks in spite of being surrounded and infiltrated. To those of us who were there the whole action was a nightmare of confusion and none of the accounts, so far written, deal with the part the 741st played. Incidentally the Battalion claim of German tanks destroyed, was twenty-seven, our loss being about five tanks. Here is an action in which our outgunned M-4's succeeded in inflicting five times our losses on a superior enemy.

PETER J. FARDELLA.
Brooklyn, New York.

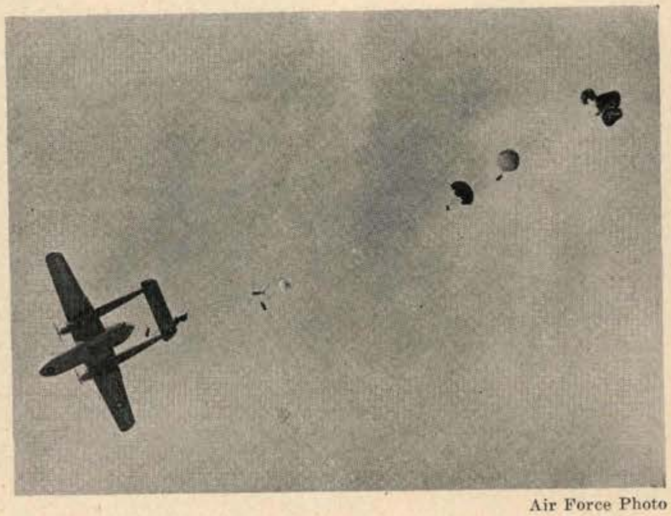
Control Insures the Airhead

by CAPTAIN STUART M. McCASH

Control Is the Essential

IN the airborne operation, as in the amphibious operation, the transition from the requirements of strategic transport to those of tactical employment is sometimes long and always difficult. The tactical plan for ground combat must presuppose early, effective, continuing control; lower standards court disaster. The nature of the strategic transport utilized in the airborne operation —the aircraft and the parachute— themselves *tend* to limit the effectiveness of tactical control on the ground; uncertainty of precise delivery, both as to *time* and location, rough landings and requirements of light weight all tend to increase the *physical* difficulty of proper delivery of control equipment.

Control is a key to the successful accomplishment of any combat operation on any level. It is proportionately more difficult in the airborne operation. The author analyzes the importance of planning, briefing, teamwork, reorganization, communications and supply upon the carrying out of such actions.



Air Force Photo

The control problems challenging the ingenuity of an airborne commander can be best portrayed when the characteristics of airborne operations are uniformly understood. Let us digress momentarily and outline some peculiar characteristics of airborne operations.

An airborne operation generally envisions the establishment of an airhead, a rapid build-up and consolidation of all available personnel and equipment in the airhead and, finally, exploitation of the initial lodgment to its intended conclusion. This is effected initially through an airborne assault by specially trained troops whose mission includes the seizure of an airhead, the destruction of the enemy therein, and the establishment of a secure airhead line. Follow-up units with heavy equipment move in as soon as the landing zone and the airhead line are secure. After juncture between the airhead force and other ground forces has been established, the airborne units are either relieved to facilitate their preparation for subsequent airborne assaults or are reinforced for the continuance of ground operation.

Complexities incident to the employment of an airborne force and its strategic capabilities have resulted in the reservation of primary control of such forces by theater commanders. To facilitate planning and to provide an agency which will insure timely recommendations for the employment of airborne forces, an airborne planning section is normally a part of each theater staff.

What are the principal control problems of airborne and how may they best be solved? The airborne division is the ideal unit to use as a basis of discussion in the presentation of these problems. In order to present a chronological picture, the steps necessary to overcome certain of the problems in the planning and execution of a division-size airborne operation will be described.

Planning for Control

First, it may be assumed that the theater commander has decided upon a course of action which contemplates the employment of an airborne division as a part of a joint operation. A joint operation, by necessity, requires coordination of all the arms and services to be committed. This is in itself our initial control problem. The airborne commander must coordinate, in the planning stages, with the Air Force, Navy, the Communications Zone, the Army Group, Army and Corps

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Captain Stuart M. McCash is an Assistant G-3 on the staff of General Clovis M. Byers, 82d Airborne Division. He has prepared this article in response to a special request of the editors.

with which he will eventually link up, and within the headquarters charged with the responsibility for planning and executing the operation. To further coordination, liaison is immediately established with all headquarters mentioned above. In coordination with the tactical air commander and the troop carrier commander, the air support plan, general landing areas, departure airfields, and the air and ground units to operate from each, are determined. The Navy is contacted to work out details for the support of naval gunfire and naval aircraft. At this time and in conjunction with the Air Force, an air corridor is established for the troop carrier aircraft separate and distinct from the route taken by surface vessels. In coordination with the headquarters responsible for the over-all execution of the operation and with the Communications Zone headquarters, the marshalling requirements are determined and the resupply plan is firmed up. The army group which will join the airhead is contacted and the details of this junction are jelled.

The Team Aspect

The control problems encountered in the mounting of an airborne operation are solved by coordination with the other headquarters concerned. Each unit, service or command must rapidly undertake its mission with the realization that the success of an airborne operation is contingent upon successful accomplishment of each individual task. An airhead will fail if not properly resupplied with required types of supply. Troop carrier aircraft must arrive at the drop zone or landing zone in accordance with prearranged schedules and their loads, be they parachutists or K rations, must be delivered intact. Naval forces must render the planned fires and, sometimes, air support. With this understanding of interrelationships, it is of paramount importance that all commanders and staff officers be imbued with this concept—the job must be done, coordination must be effected, concessions and assistance must be freely given between all services to the expeditious, efficient, economical, and successful accomplishment of the over-all mission.

So much for planning. To progress with our hypothetical operation; it is axiomatic that a thorough understanding of operations to be undertaken must be universal within the command. This entails thorough briefing of all personnel, clear definition of responsibilities and unit mission, which are reduced to a maximum of simplicity. During World War II briefing techniques were developed into a fine art which paid handsome dividends.

Assembly and Reorganization

The next series of control problems arises during the actual execution of an airborne operation. The initial control of parachutists is particularly difficult. Present-day troop carrier aircraft fly one hundred fifteen to one hundred thirty miles per hour during jumps and spread their sticks of approximately twenty troopers over a distance of eight hundred to one thousand yards. The jumpers leave their planes from two doors, one on each side of the fuselage. A ground pattern is created wherein individual parachutists are approximately forty yards apart. On difficult terrain, during hours of darkness, or when engaged by enemy fire, the assembly of these sticks into fighting teams and larger tactical organizations presents one of the most difficult of control problems. Troops are briefed to assemble on terrain features, smoke and sonic signals, and other means. Upon landing, sticks assemble upon the stick leader and their equipment is secured from their bundles. As soon as the equipment has been collected, the stick leader moves his troops to the assembly area by the most expeditious means. Upon arrival in the unit assembly area and in the course of reorganization of the larger tactical units, ammunition and equipment are redistributed if necessary. The organizations are then capable of tactical employment.

In World War II airborne operations, reorganizations were accomplished with a considerable degree of success in most instances. However, reorganization will be an ever-present problem until such time as assault aircraft are so developed as to minimize the need for parachutists. Efforts further to improve reorganization aids and techniques must be continued. In this connection, primary consideration must be given to the indoctrination of jumpers with the necessity for establishing contact with adjacent units and the accurate reporting of position area. We must know the location of all units at all times and we must establish our perimeter by physical contact. An airhead compares to a 360° beachhead, and to be held it must be a cohesive line. This can be accomplished only when units are rapidly and completely assembled and the exact location of each adjacent unit is known.

Supporting the Airhead

After the successful reorganization of our combat assault elements, primarily composed of parachutists, another difficulty arises. The principal support arm, the artillery, may be dropped by parachute or it may arrive in the airhead by glider. However, there is always a possibility that their reorganization may be delayed due to enemy action or that the terrain is such that the artillery units are not readily available to support the infantry units during their initial contact with the enemy. By necessity we must then rely to a great extent for close support upon tactical aircraft. Fighter aircraft and light bombers can operate with ease within the radius of any airhead which can be established by troop carrier aircraft at the present time. However, fighter aircraft, in order to render close support to ground elements, must have tactical air control parties within the airhead. To date this requirement has met with certain limitations. Parachutists without special training are not ordinarily fully capable of directing tactical aircraft operation on ground support missions. Necessary radios utilized to contact Air Force units are of considerable size and are quite fragile. As a consequence the dropping of this equipment presents some uncertainties. There exists today a need for an airborne tactical air control party which can land via parachute in the airhead with the assault elements and which is so equipped that it can expeditiously gain and maintain contact with tactical aircraft aloft. Numerous solutions to this problem are within our capabilities. One solution involves the training of Air Force tactical air control parties to drop by parachute in the airhead. Another solution is to train airborne personnel to function in improvised tactical air control parties.

Communications

Another control problem presented in the initial stages of an airborne operation involves our airborne division communications facilities. Through necessity, great dependence is placed upon radio communication during the initial stages of an airborne operation. The airborne division has been assigned a signal company to furnish wire, radio, and message service. The organization of this unit is comparable to that found in the infantry division except that non-airtransportable equipment has been eliminated from the table of organization. This reduction of equipment has resulted in a corresponding reduction of personnel. Adequate signal facilities are available to the airborne division commander except when the airhead is more than a hundred miles removed from any friendly force. For distances beyond one hundred miles, dependence must be placed on sky-wave transmission which is subject to interruption and seasonal changes. To provide more reliable communication, signal support could well be rendered by the Air Force or the Navy in the form of automatic relay stations.

In the further development of an airhead, after initial reorganization, it is advantageous to establish wire as a primary means of communication. An interesting contrast exists between amphibious and airborne operations in this regard; during amphibious operations, units are developed from a given beachhead in one direction. During the development of an amphibious landing the tactical organization lands in sequence. In an airborne operation assault waves land en masse. The development of our forces corresponds to the protraction of the spokes of a wheel from its hub to its rim. The problem of laying wire to subordinate airborne units is difficult. Wire must be laid in two dimensions, laterally and longitudinally; usually it must be laid to all units simultaneously.

For the solution to our communication problem we must look to the commander since our facilities are predetermined. He must anticipate his needs accurately and then insure that the required communication personnel and equipment are phased into the operation so as to be available in the desired quantity when they are needed. This may appear self-evident; however, aircraft will never be so plentiful that every item of equipment desired may be airlifted to the objective. A decision must be reached relative to what equipment and what personnel can best be transported by the means available.

The Supply Problem

To sustain an airborne operation and to develop an airhead the airborne force must be adequately resupplied. It is impractical to attempt to move the supplies required to support an airhead operation simultaneously with the movement of assault elements. Sufficient aircraft may never be available to meet such a requirement; and, should the resupply arrive with the assault echelon, adequate personnel could not be readily provided for its recovery and distribution within the airhead. Airborne units must be resupplied subsequent to the assault landings and sustained by airlift until such time as the airhead operation is concluded or supplies can be brought in overland by friendly ground forces. Again it is interesting to compare an airborne operation to an amphibious operation; the same requirements relative to resupply exist in both types of operations. The amphibious commander, prior to the execution of his operation, determines what beaches will be used for the landing of supplies and insures that adequate personnel are ashore to unload these supplies, store them properly and make the necessary distribution to the forward elements. This requirement is also true of the airborne commander. However, the airborne landing of these supplies is much more difficult. It is not at all unusual in airborne operations, for the drop zones or landing zones designated for the resupply missions to fall into enemy hands, or for delivery of supplies to be misdirected or scattered.

It is easy to visualize the difficulties entailed in getting these supplies to the right place at the right time. This again is a control problem which can be solved by coordination during the planning phase of the operation and by continuous communication with the bases during execution.

Conclusion

In summary, the unusual characteristics of airborne operations create almost unique control problems. Establishment of an airhead is a joint service mission. Control in the planning stage is effected by coordination. During the actual execution of the operation, control is dependent upon adequate planning, the ability of units to assemble successfully following landing, the proper phasing of equipment and communication facilities into the airhead, and adequate resupply. These are all problems of control and of command. Recognition of their existence and importance is the primary step in their solution.

How Patton Kept Tabs On His Third Army

CARDED

by SERGEANT FIRST CLASS ROBERT D. SWEENEY

[EDITOR'S NOTE: *This is one more article stressing the importance of communications. Along with the articles published by the* JOURNAL *in the past and to be published in the future on this important subject, it should serve as a warning that what we have in the so-called Tables of Organization is not enough.*

During the Civil War, General Nathan B. Forrest became famous for being there "fustest with the mostest." This habit did not develop by accident. Forrest maintained a corps of "gallopers," officers whose sole job was to ride to different key headquarters, analyze the situation, pass on the latest orders, and then gallop back to Forrest to bring him up to date. They did not interfere with commanders, but merely were extensions of Forrest's eyes and ears.

When World War II broke, some commanders were using a variation of this system, by creating a special radio net called the Staff Net by which staff officers visited key units while linked with the commander, thus affording a means by which the regular command net, with its heavy traffic, could be by-passed. During combat, XII Corps, under Lieutenant General Manton S. Eddy, employed observers, equipped with long-range radio, who attached themselves to commanders' groups and kept Corps Headquarters constantly apprised of the exact situation. The outstanding success of XII Corps throughout the conflict can be said to be due in no small measure to the adoption of this system.

SOME of the dispatches that not-too-well informed correspondents sent back to the United States during the Third Army's dash across France stated that Lieutenant General George S. Patton, Jr., was out of touch with his armored columns. The reports were that communications had broken down completely, and that Third Army spearheads were lost in the Brittany peninsula. Nothing could be farther from the truth. Obviously, there was a terrific communications problem, for the Third Army was moving simultaneously in three directions; VIII Corps west toward Brest; XII Corps south through Rennes; the XV Corps and XX Corps due east.

Long before the Third Army became operational, General Patton foresaw the need for a fast and efficient communication system to keep him constantly informed as to where his troops were and what they were doing. In the absence of appropriate Army Signal Troops, SIAM, General Patton on 20 May 1944 selected as his Army Cavalry the Sixth Cavalry Group (Mecz), commanded by Colonel Edward M. Fickett. The Group was alerted and trained for the mission of establishing the "Army Information Service" (AIS).

MISSION OF AIS

The Army Information Service furnished liaison (Communication) detachments to all front-line units, whether they were heads of spearheads or dismounted patrols. These detachments reported G-2 and G-3 information direct to the Third Army Forward Command Post. The information was based on front-line observations, in collaboration with all subordinate echelons of command. By-passing normal communication channels, reports were made direct to the Army Commander with a minimum delay. The Group Commander was responsible only to the Army Commander for the successful execution of this mission. There was no intermediate person or headquarters in the chain of command between detachments and Group Headquarters.

When action is taking place at battalion levels and is reported back through command channels, the message passes through regiment, division, and corps, then to army. This may take 10 to 12 hours, and army gets only an over-all picture of the action. No criticism is meant or implied of the normal system of signal communication, nor of the forwarding of battle information through the normal chain of command, but delay is part and parcel of that system and, for any army ambitious to go places, it simply will not do.

As originally planned, the Information Service was to monitor

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Sgt 1st Cl Robert D. Sweeney entered the service in early 1939 and was assigned to the 6th Cavalry Regiment then located at Fort Oglethorpe, Georgia. He served with the 6th Cavalry Regiment and Group until July 1945 as radio operator, Communications Instructor, and Communications Sergeant. During the operation of the Army Information Service he served as the Communications Chief. Since September 1945, he has served as the Sergeant Major for the Department of Communications, The Cavalry School and later The Ground General School, Fort Riley, Kansas.

transmissions of friendly battalion, regiment, division, and reconnaissance units operating within the Third Army. After the initial stages of the campaign in France, however, the monitoring was dropped entirely as it proved to have little value. If through static or other interference the operator missed an important part or phase of a message, he was not permitted to break into the radio net to clarify what he had missed.

Organization

In a directive to Colonel Fickett, General Patton assigned him the responsibility of Organizing and Operating the Army Information Service. Colonel Fickett, with Major Thomas H. Stewart, III, Group S-3, immediately set to work to comply with the directive. A few days later a plan and a request for additional equipment were submitted and approved.

The 6th Cavalry Group was composed of the 6th and 28th Cavalry Reconnaissance Squadrons, both mechanized, which were commanded by Lieutenant Colonels Tom E. Matlack and Walter E. Day, respectively. The Information Service was to utilize only one squadron; the other squadron was to be available for Army ground reconnaissance missions and for special Army tasks.

From the three reconnaissance troops of the Cavalry Squadron were originally organized nine platoons ("Information Detachments"), and three supplementary detachments. From the Squadron Headquarters was organized one additional supplementary detachment.

a. Platoon Organization (Information Detachment).

Personnel

2 Officers
40 EM

Vehicles

4 Armored Cars (M-8)
8 Trucks, ¼-Ton
1 Half Track
2 Motorcycles, Solo

Communications

4 SCR 506/508
1 SCR 607
1 SCR 193
3 SCR 510

b. Section Organizations: Within the detachment the basic organization for operations normally consisted of two sections, one a Command (or headquarters) and Monitor Section, the other a Liaison and Patrol Section. These sections were organized as follows:

1. Command and Monitor Section:
   1—Officer
   4—Armored Cars (M-8) w/SCR-506/508
   4—Trucks, ¼-Ton
   1—Solo Motorcycle
   1—Half Track.

This section was further organized into Message Center, three monitor stations and a rear link, a CP and security detail.

2. Liaison and Patrol Section:
   1—Officer
   1—Truck, ¼-Ton w/SCR 193
   1—Truck, ¼-Ton w/SCR 607
   1—Truck, ¼-Ton w/SCR 510
   1—Solo Motorcycle.

Though the troop commanders were responsible directly to Group Headquarters, supply and personnel administration were conducted by their squadron headquarters.

Operations

During the first stages of the operation, the division detachments reported by radio directly to the 6th Cavalry Group Headquarters. The traffic became increasingly heavy and by the latter part of August the Group Headquarters was receiving messages from sixteen divisional detachments. When it was found that group could not handle such a large volume of traffic, the situation became critical, and on 25 August the radio setup was changed so that division detachments sent their messages to the Troop Commander at Corps level. Here the Troop Commander assembled the information and relayed it to Group Headquarters by radio. At the Group Headquarters the information was received, plotted, evaluated, and sent to the AIS liaison section, stationed at Army Headquarters in close proximity to the operations section. From these the messages and information were distributed to G-2, G-3 and the other Army Staff members concerned.

When a division planned to attack with two regiments, the Platoon Leader usually placed a patrol consisting of an armored car and one or two ¼-ton trucks with each regiment to follow the attack and report its progress to him by radio and sometimes by messenger. Should only one regiment make the attack, the lieutenant might send a larger patrol to cover its front-line activity. Ordinarily, the patrols were commanded by NCO's, sometimes by privates, and in important instances, by the lieutenant himself.

Communications Systems

To accomplish the mission of the Army Information Service, the 6th Cavalry Group installed medium and/or long-range radios in tanks, armored cars, ¼-ton trucks, and half tracks. Three additional 2½-ton trucks mounted with SCR 399's were obtained from Army.

Complex radio and wire nets were established. All means of communications were made available from battalions, division, and corps AIS detachments to Army. Group tactical nets consisted of not more than four radio stations including the Net Control Station (NCS) at Group Headquarters. During the breakthrough of a spearhead or a counterattack against some particular organization, a net was organized of only two stations so that a blow-by-blow account of the battle could be furnished Army without undue delay. At the same time, Detachment Commanders at division and corps level were in a combination radio and wire net called "Radio Link," which afforded them a means of talking by phone direct to Group Headquarters. Actually, though not known to many commanders below division level, any soldier in the front line with a field telephone could have talked through to the United States if he had known the proper code words and procedure.

Before the Group was committed, four radio nets were set up under an operations procedure (SOP) which was known by all members of the command. These nets were lettered A, B, C, and D, and were known as the Tactical Net, Administrative Net, Movement Net, and FM or Frequency Modulated Net which consisted of high-frequency, short-range radio equipment. This communication plan was extremely flexible. Commanders could automatically shift from one net to another by simply switching a switch or push button on their radio. This saved valuable time and was a deciding factor in many instances during actual combat.

When the nets were reorganized to meet the AIS mission, they were very simple. All Tactical Nets from detachments to group were for one-way traffic only. Group and Army were interested in only one thing and that was, "What is the situation on all fronts?" During the whole operation not one single directive was sent over these tactical nets to organizational commanders. Corps and divisional detachments maintained scheduled contacts with a spare radio to their individual squadron headquarters for the purpose of supply and administration.

Information transmitted to Group was in code or cypher. For this purpose the Converter M-209, a cryptographic device, was used. Every member of the Group soon became expert in the use of this device.

Each of the detachments made special messenger runs periodically each day. The messengers were used to carry information of the big picture. Copies of battalion, division, and corps field orders; maps; and overlays were often sent back. Messenger and courier service proved to be of great value in keeping communications open during the breakthrough. At this period solo motorcycles were found to be better adapted for this work than the ¼-ton trucks, but when the cold, wet weather set in, the going by motorcycle became extremely precarious and their use was limited.

At Group Headquarters all information was collected, analyzed, evaluated, and transmitted in a steady stream to Army by radio, telephone, teletype or special messenger. It must be realized that Group Headquarters was at all times in the vicinity of Third Army Command Post (CP). For security reasons, all powerful radios at Group Headquarters were operated by remote control. Transmitters were located some distance away from the CP.

Never during the drive from Avranches to Chalons sur Marne was the Third Army CP in one place more than 5 days. At one time during the latter part of August the XIII Corps was in Brittany, fighting for Brest and containing enemy forces in Lorient and St. Nazaire, while at the same time it was conducting sieges of St. Malo and Dinard. Meanwhile, other corps of the Army were active along the Moselle River, from Thionville south to include Nancy. The total distance between the VIII Corps elements at Brest and the forward elements of the remainder of the Third Army along the Moselle River measured the breadth of France (over 500 miles), yet Army Headquarters relied on AIS for information concerning all elements in the fight.

Some organizations marveled at the way these operators worked the SCR 506 (medium-range set) over distances of 300-500 miles, sometimes using voice transmission. Operations of this kind were done by long wire antenna measuring 55 feet or by cutting a wire to match a certain frequency. For this the formula $\text{Length} = \frac{365}{\text{Freq (MC)}}$ was used.

TRAINING

Colonel Fickett took command of the 6th Cavalry Regiment early in 1942. He inaugurated a rigid training program consisting of Regimental Radio Schools, and special NCO courses in map reading and reconnaissance. Individual troops conducted tactical problems on the average of three a week, putting into practice the schooling program. Before moving overseas, the 6th Cavalry had participated in the Louisiana, Tennessee, and Carolina maneuvers and was by this time well trained for its mission. Colonel Fickett had often stated that "Good communications is the guts and essence of cavalry reconnaissance and if every soldier in the group were a qualified operator there still wouldn't be enough." As a matter of fact, when the 6th Cavalry Group was first committed it had a minimum of three radio operators for each radio. These operators were not only trained in Radiotelephone procedure and net discipline but could operate code at 20 or more words a minute.

CONCLUSION

Until 1 November, the 6th Cavalry Group performed an invaluable mission for the Army Commander. After the system had been in effect for about four and one-half months, the reporting of AIS information was abandoned. AIS had accomplished its highly important mission during the fluid stages of the campaign. Corps G-2's were then given the responsibility of reporting information directly back to Army.

It is difficult to conceive how, without AIS, General Patton could have maintained a complete and running picture of the progress and the situation of armored divisions spearheading in several directions and of other components literally scattered all over northern France.

In future wars and campaigns provisions should and probably will be made for a service similar to the AIS, but during the battle of France, General Patton had to improvise with the tools at his disposal.

A Growing Responsibility!

by Major Aley L. Smith

GENTLEMEN, let's take inventory. If you are an officer or noncommissioned officer assigned to an armored unit, you should be interested in the communication facilities in armored units. For purposes of simplicity, let's consider only the tank company and tank battalion.

Do you know that the new medium tank battalion is equipped with 203 radio sets, which is the equivalent of one radio set for each three men in the battalion?

Do you know that the new heavy tank battalion is equipped with 189 radio sets, which is the equivalent of one radio set for each three men in the battalion?

Do you know that the new heavy tank company is equipped with 52 radio sets, the equivalent of one set for each 2.7 men in the company?

Statistics such as these mean very little except to indicate that the extra communication facilities, which were drawn on special authority during the last war, are authorized in the new tables of organization and equipment. Provisions for the proper employment of these facilities must be considered in greater detail in all future tactical plans involving armor, even down to the company level. But now let's consider something of far greater significance to the individual.

Do you know that you are the person who will operate these radio sets? Yes, you will be required to turn on the sets, select the proper operating channels, and communicate by radio with other members of your unit. In addition you will direct your tank crew by use of the interphone system which is an integral part of each tank. You will talk, by radio, with supporting or supported infantry, artillery, and aircraft.

Since these extensive facilities have been provided and are considered necessary, it is recommended that your unit training program be revised to expedite the training of all assigned members in such communication subjects as: radio sets and radio nets of the unit, radiotelephone procedure, communication security, authentication, signal orders, wire communication and the use of all of the other means of communication authorized for your unit.

Do you have communication officers, communication chiefs, and radio repairmen who are properly trained? If the answer is *no,* the recommended solution for this problem is to select the best qualified personnel available and send them to your branch school for communication specialist training. The successful completion of an 18½-week course will fully qualify these men in the MOS required. Ninety per cent of the instruction they receive will be devoted to communication subjects. In addition to communication subjects, they will be given a course in modern instructional techniques which will enable them to return to their unit and instruct other members in all phases of communication. Sixty to seventy hours will be required to present communication subjects to personnel of the unit other than communication specialists.

The Armored School also conducts instruction in communication subjects for all officers and noncommissioned officers in the integrated courses. An average of sixty hours of this instruction is included in each integrated course.

Past experience at The Armored School indicates that unit commanders too often select personnel who do not measure up to the prerequisites for the course, and this produces results that are not as good as they should be. Too frequently, unit commanders do not utilize the graduates of school courses in the positions for which they were trained. It should be emphasized that course graduates are classroom specialists who should be given practical "on the job" experience when they return to their unit.

An armored unit is organized and equipped to rapidly concentrate fire power, armor protection, and shock action against the enemy, and to take immediate advantage of resultant battle opportunities as they present themselves. Adequate and frequently elaborate communication facilities must be provided to insure speed and flexibility in the issuance of orders to control an armored unit once it is committed.

Far too many officers regard the subject of communication as being "technical humbug" which has no application to them. Many officers have indicated that they believe there will be a radio operator to operate their radio for them. These are dangerous misconceptions; for in armor, each officer and NCO is his own radio operator.

The communication equipment provided is being continually modernized and standardized to keep it abreast of new requirements. Communication procedures are frequently changed or revised by joint or combined communication boards. Therefore refresher instruction should be included in each new training schedule to keep the users abreast of all new techniques.

Signal communication is a responsibility of the commander. It has become a growing responsibility. Most officers and NCOs know the capabilities and limitations of their tanks, weapons, and ammunition; but too few realize that their communication equipment is just as potent a weapon, and perhaps a greater responsibility than any of the others.

CARDED

Britain's Military College of Science

by COLONEL R. D. NEVILLE, O.B.E.

A significant description of important steps being taken to train and prepare the users of military weapons and equipment in the research and development bearing on their future tools of war.

ON the wall in the Library of Beckett House, Shrivenham, Berkshire, in southern England, is a plaque bearing these words:

> "Presented by Staff and Faculty of Shrivenham American University to the British Army in commemoration of the University's residence at Shrivenham Barracks 1st Aug. to 5th Dec. 1945."

Now, in these same buildings, the British Army has created its own University with a student population of some four hundred officers. This Military College of Science will have the role of educating officers in pure science and technology so that they may be capable of appreciating the scientist's and engineer's problems in relation to the technological aspects of war. It will also train officers to apply their military knowledge and experience to these problems, so that they may later advise on the design and development of military material.

The College has two major functions: to give a university training in engineering or the natural sciences to young officers who have recently graduated from the Royal Military Academy at Sandhurst, and also to instruct more senior officers in military technology in order to qualify them for appointments in the Ministry of Supply or as Technical Staff Officers in the Army itself.

The young officers are drawn principally from the Royal Engineers, Royal Corps of Signals and Royal Electrical and Mechanical Engineers, and they require a university training in order that they may be fully qualified officers of their respective corps. They include, however, a number of officers from other arms, notably Royal Armoured Corps and Royal Artillery who have scientific leanings and who are destined in future to take their part in the development of the material of their respective arms.

The intake of officers at the Military College is about 90 a year. The course lasts two years during which the officers take the examinations for the degree of Bachelor of Science, London University.

Suitable Educational Background

The second course is the Technical Staff Course, also lasting two years, with an intake of about 75 officers annually. These are selected from all arms of the British and Dominion armies, to whom are added a few officers from the United States Army who are very welcome. The British officers must have a suitable educational background, and must qualify by sitting for an entrance examination. Since the age bracket for the course is 27-32 this means that many officers have virtually to return to school in order to prepare themselves for the examination in mathematics and physics.

The first year of the course deals with fundamental science together with instruction in Mechanical and Electrical Engineering. During the second year, the application of engineering theory and practice to weapon technology is taught—using the word "weapon" in its widest sense. This part of the course includes the principles of design. Illustrations of the application of these principles to practice is given by reference to examples of typical equipments both British and foreign. Graduates are awarded the symbols "p.t.s.c." which denotes "passed technical Staff Course."

These officers are intended to be the link between the soldier "user" and the engineer and scientist. They understand the language of both and can use their military experience and engineering knowledge to ensure that the weapons provided for the Army are those which the soldier requires. They will not be limited throughout their service to technical work, but will return to regimental duty from time to time in order not to lose touch with the soldier's point of view. Furthermore the officers are to be considered as equally eligible, with graduates from the Staff College at Camberley, for appointment to War Office and Army staffs, and, in particular, to the higher appointments dealing with weapon development and procurement.

Postgraduate Studies

It is important for the academic health of the College, that its activities should not be limited to these two courses. Capacity is reserved for postgraduate studies in specialized subjects such as telecommunications and servo motors which the College is particularly well qualified to teach.

According to University custom in Britain, it is rightly expected that the professional staff should have both time and facilities to pursue private research. Not only are these provided, but the College is in a position to undertake more formal research contracts for the Ministry of Supply and other external organizations.

The College has been equipped with the most modern apparatus available, including such equipment as wind tunnels and differential analyzers. In addition to the

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Colonel R. D. Neville, O.B.E., served during World War II on the Weapons Technical Staff in the Middle East, North Africa and Italy, working with the U. S. Fifth Army. He is Director of Studies (weapons) at Britain's Military College of Science.

normal laboratory equipment there is a wide range of modern artillery and infantry weapons, searchlights, radar, fighting vehicles, communications equipment, and an experimental ballistics range. For research purposes many of the professorial staff have their own personal laboratories.

The College is both a University and a military institution. This is reflected in its combined civil and military educational staff.

The four faculties of Mathematics and Physics, Chemistry, Mechanical Engineering and Instrument Technology are each directed by an eminent professor, who has under him two or more branches staffed by civilian associate professors and lecturers. The College does not yet possess a faculty of Civil Engineering. The faculties are responsible both for the young officers' courses and for the technical staff course.

The three military Directors of Study (Colonels), with their small staff of technical staff officers, are outside the civil faculty organization and are responsible for military application in the Technical Staff Course and, in general, to ensure that the work of the faculties is biased, where bias is needed, towards the needs of military technology.

Study Groups and Panels

The study of military technology is conducted by way of *ad hoc* Study Groups and Panels under the direction of the appropriate Military Directors of Studies and instructional staff. Each group or panel is assigned, for the time being, to the study of one of such subjects as air defense, communications, automotive transport, ammunition, tropicalization and lubrication. Expert representatives of the War Office, Ministry of Supply and Army Schools and other establishments frequently attend group and panel meetings which are thus a fruitful means of spreading a common doctrine.

The College is commanded by a Major-General and it has been particularly fortunate in its first postwar Commandant, Major-General J. D. Shapland, C. B., D. S. O., M. C., who had a distinguished war record in Burma. In December 1948, when he was transferred to the British Army on the Rhine as Major-General i/c Administration, he was succeeded by Major-General W. J. Eldridge, C. B., C. B. E., D. S. O. M. C. General Eldridge has had a wide experience in high appointments in the War Office, and was Director-General of Artillery at the Ministry of Supply and in fighting service in France in World War I and in Anti-Aircraft Command and in Italy in the recent war.

The College has been equally fortunate in its Dean, Dr. C. H. Lander who is the head of the civil professorial staff. He was formerly a professor of Engineering in London University and is an acknowledged expert on fuels.

The Army Council is advised in matters of policy regarding the College by an Advisory Council of distinguished civilians drawn from the Universities and from industry together with certain high ranking officers and ex-officers from the War Office and Ministry of Supply. The chairman is Sir Henry Tizard, who is also chairman of the Defence Research Policy Committee of the Ministry of Defence and a scientist of international repute.

The results of the first efforts of this Army University, which is only two years old, and thus in its extreme infancy, are encouraging and reveal that its work appears to be on the right lines. The first young officers still have a year of their course to go before graduating for their Bachelor of Science degrees. But the first year examinations showed results comparing favorably with those of the old established universities of Britain. The graduates of the first technical Staff Course have already been assigned to their first appointments as technical Staff Officers. The College authorities are confident that they have done what they were required to do but experience alone can show whether the requirement was correct. Doubtless the curriculum will be streamlined and reshaped from year to year but that is entirely healthy and proper in a live institution.

Answers to ARE YOU WELL INFORMED questions on page 31

1. Italy, Luigi Einaudi; France, Vincent Auriol.
2. Teheran in November 1943: Yalta in February 1945: Potsdam in July 1945.
3. They are governing bodies respectively of Iran, Japan, Norway.
4. Karens are a racial minority within Burma, in revolt against the government.
5. General Bradley, Army Chief of Staff: Admiral Denfeld, Chief of Naval Operations: General Vandenberg, Air Force Chief of Staff: Admiral Leahy, the President's Chief of Staff.
6. San Marino, located in east-central Italy.
7. Dr. Ralph Bunche, U. N. Mediator for Palestine.
8. Albania, Bulgaria, Czechoslovakia, Hungary, Poland, Rumania, Russia and Yugoslavia.
9. In Saudi Arabia.
10. Chairman of the Western Union Defense Force, Uniforce.
11. Francisco Franco is Spain's rightist ruler. The others are communists.
12. Norway.

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THE VOICE OF HISTORY: REVIEW OF AN ERA

I CAN HEAR IT NOW. By Edward R. Murrow and Fred W. Friendly. Columbia Masterworks Album MM-800. $7.25.

A review by

Captain William Gardner Bell

"I Can Hear It Now" is a five-disc album of double-sided twelve-inch recordings. It runs to about forty-five minutes of playing time, and through the sound dimension, embraces the jam-packed thirteen-year period of history from 1932 to 1945. Yet, brief as it must necessarily be, it nevertheless conveys the full implications of a replete era, and suggests the two years of work on the part of Ed Murrow and Fred Friendly in listening to the more than five hundred hours of broadcasts from which the final selections were made. One of the greatest tasks to confront the authors must have been that of final selection, with the elimination of so much deserving material.

Edward R. Murrow weaves a narrative around the voices and sounds of this exciting period of contemporary history in the same manner which makes his wartime reporting from London and his current daily news broadcasts some of the outstanding journalism of the day. His well-modulated, meaningful voice imparts significance to the story thread, leaving it unencumbered by the portentous vocal histrionics so prevalent in our high-pressure radio age. At no point does he detract from or overshadow the importance of a voice or sound. Rather, he enhances the whole.

International
Eisenhower: "A landing was made this morning . . ."

With all of the material scattered about us it was inevitable that someone should put together on recordings some of the history of the day. This reviewer would like to see more of it, especially for the military field. How valuable would be an album on Munich! The authors of this present work hint at such a possibility. Or the D-Day period at Normandy! Or the Congressional action on an important piece of legislation!

Wide World
Chamberlain: "Peace in our time."

The news sections of the radio networks have sampled this field before in their year's-end summaries of events, but the brevity of the coverage and the use of radio actors has weakened the presentation. Today, radio's journalists are making increasingly effective use of wire and tape recording to spice their reporting of the news, indicating the possibilities of this field where "I Can Hear It Now" sets such a precedent.

International
Mussolini: "The hand that held the dagger . . ."

The knowledge that the groundwork has been done should guide the historians to future gems in this medium, although, as the authors again suggest, the period of the ear has been ended by the advent of television, and future work of this nature will be in the eye-and-ear field. At any rate, advance planning may be done on any number of future events, assuring that

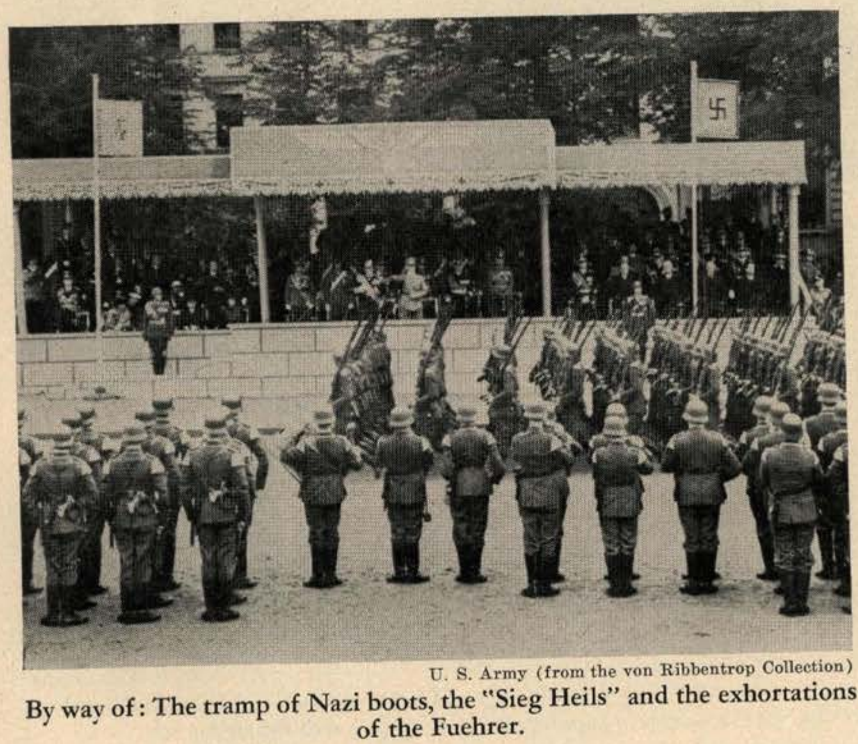
International
Churchill: "Give us the tools and we will finish the job."

U. S. Army

From Roosevelt in 1933: "The only thing we have to fear is fear itself."

SOME OF THE PERSONALITIES . . .

WILL ROGERS • FRANKLIN ROOSEVELT • HUEY LONG • DUKE OF WINDSOR • FIORELLO LAGUARDIA • ALF LANDON • JOHN L. LEWIS • NEVILLE CHAMBERLAIN • ADOLPH HITLER • LOU GEHRIG • CHARLES LINDBERGH • AL SMITH • HUGH JOHNSON • BENITO MUSSOLINI • PAUL REYNAUD • WINSTON CHURCHILL • PRINCESSES ELIZABETH AND MARGARET ROSE • JOE MARTIN • WENDELL WILLKIE • GENERAL EISENHOWER • CHARLES DEGAULLE • KING HAAKON • JOSEPH STALIN • THOMAS E. DEWEY • ARTHUR GODFREY • PRESIDENT TRUMAN • EDWARD STETTINIUS • GENERAL MACARTHUR •



U. S. Army (from the von Ribbentrop Collection)

By way of: The tramp of Nazi boots, the "Sieg Heils" and the exhortations of the Fuehrer.

all phases are available for a piecing together for posterity. The possibilities are unlimited.

"I Can Hear It Now" is truly an experience; one which may be lived and relived in successive playings of the album. To listen to it is to find a strange parallel creeping in upon you, an insistence to translate what you are hearing into the terms of the moment. Perhaps this is the result of certain outright similarities between the past and the present. The words of Franklin Roosevelt in 1933—"The only thing we have to fear is fear itself"—are not so far amiss in this day of tension following a war whose end has failed to bring us ease. And we need almost pause a moment, as we listen to their voices once again, to realize that Hitler and Mussolini are no longer with us—for it seems that an Axis pall lies over us still. To hear these voices is a forceful reminder in a tentative present of a not-too-distant past.

Hinging on the tension in the world today is a sense of warning that lends full realism to the words of another man, gone now almost a decade: to hear Neville Chamberlain again is like a warning.

Those of us who were away at war will find a refreshing newness in items whose moment-of-occurrence impact may have slipped by us in the press of more immediate business. We may, in reliving these moments, be surprised that such processes of democracy as political campaigning went forward in the midst of the fighting period. It's a heartening thought. And there is quite a fascination to hearing the reports on that "more immediate business" of which we may have been a minute part. At the same time, the writer has the feeling that the war, while well covered at the declaration and surrender level, leaves something to be desired in the meaty area where the actual stuff took place, an emptiness out of keeping with its importance ratio in the period of history under consideration. It may be, however, that this is an unfair criticism in view of the fact that the material just wasn't available. Atmosphere is given in an effective selection of war terms, but it is unfortunate that there are not available more bits like the George Hicks account off Normandy, where the real thing provided all of the sound effects anyone might wish.

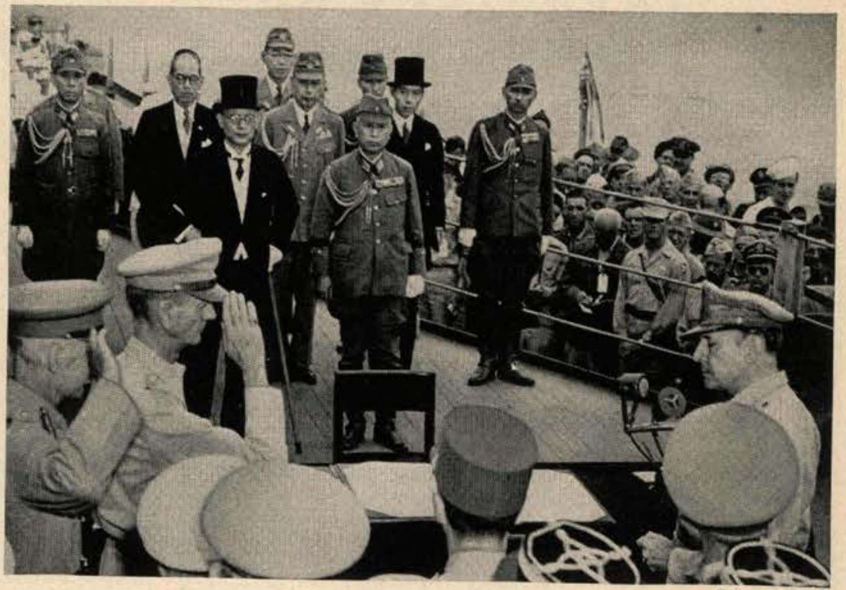
The high emotion of Herb Morrison's eyewitness account of the zeppelin *Hindenburg* disaster, and Arthur Godfrey's description of the funeral procession of Franklin Roosevelt, along with the calm voices of statesmen making significant statements in a variety of tongues, vie with each other in sending shivers up the spine.

All is not tension and emotion in this review of thirteen years of news high spots. Will Rogers heads off the album on a note of humor (perhaps wry humor) with his remark that "We [America] will hold the distinction of being the only nation in the world that ever went to the poorhouse in an automobile." There's something on the Louis-Schmelling fight, and the spicing of domestic politics, if that can be classified as outside of tension and emotion. But on the whole, the album depicts a pretty powerful hunk of history, and in looking at that history in the larger sense it is hardly possible to disassociate ourselves from the ruling events of the time. Thus the tension and emotion.

The selection of the statement by General MacArthur at the signing of the documents of surrender aboard the battleship *Missouri* . . . "let us pray that peace be now restored to the world, and that God will preserve it always. These proceedings are closed. . . ." seems to be the point that marks the end of an era, and the opening of another. It is an effective moment to end the album.

Most listeners to this album will have their ideas on omissions, deletions and additions; matters of personal opinion which inevitably vary. No listener will be able to sit through the album without feeling the thrill of a vital experience.

Narrator Murrow's epilogue is a searching glance at the atomic age, in which dusk and dawn jockey for position. That this full-charged period now gone by may go down as just an instant in the Book of Time is undoubtedly true. It is also true that the future may be viewed with a raised eyebrow. It has all of the characteristics of a question mark. But there is one unequivocal point about the instant era just ahead. Most of us sincerely hope that it will not assume some of the characteristics of the instant just gone by, which, with Ed Murrow's assistance, we can hear now.



International

To MacArthur in 1945: ". . . let us pray that peace be now restored to the world, and that God will preserve it always."

SOME OF THE EVENTS . . .

THE HINDENBURG DISASTER · MUNICH · LOUIS-SCHMELLING FIGHT · INVASION OF POLAND · FRENCH SURRENDER · PEARL HARBOR ANNOUNCEMENT · U. S. DECLARATION OF WAR · D-DAY · NORMANDY INVASION · ROOSEVELT FUNERAL · GERMAN SURRENDER · SAN FRANCISCO CONFERENCE · ENOLA GAY TAKE-OFF PRAYER · JAPANESE SURRENDER · *PLUS* THE LEADING EVENTS INVOLVING THE PERSONALITIES LISTED OPPOSITE.

International

To D-Day: And the messages of Eisenhower, de Gaulle, King Haakon and others, giving the news in many tongues.

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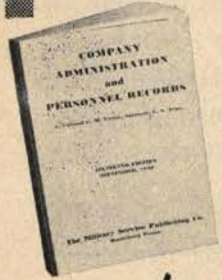

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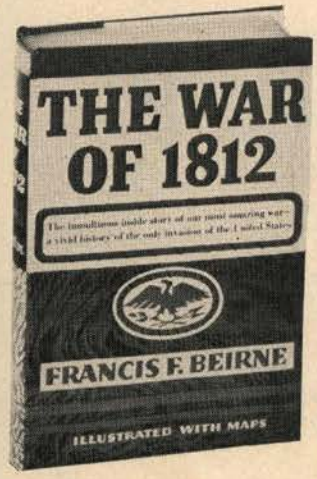
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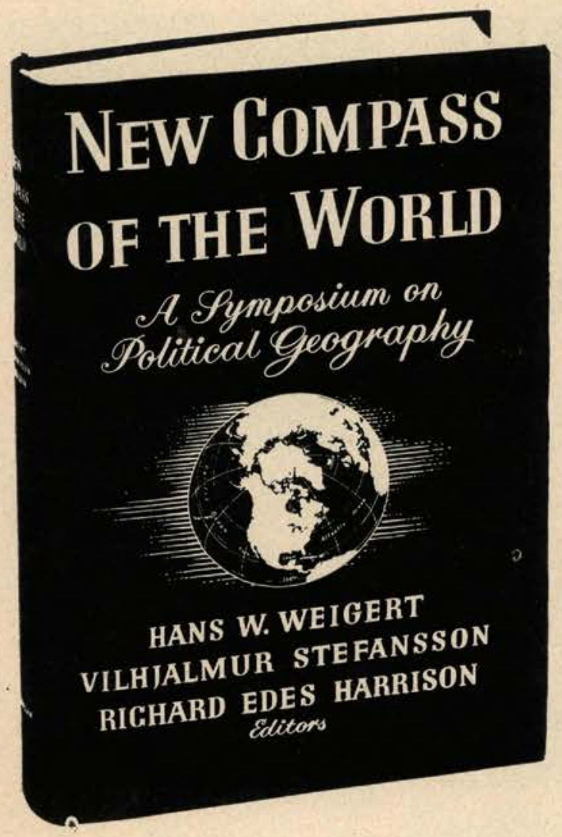

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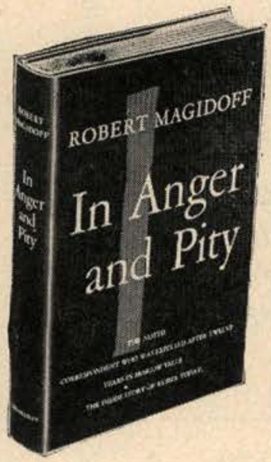

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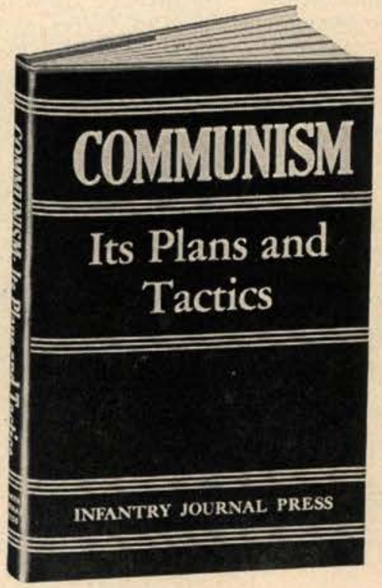

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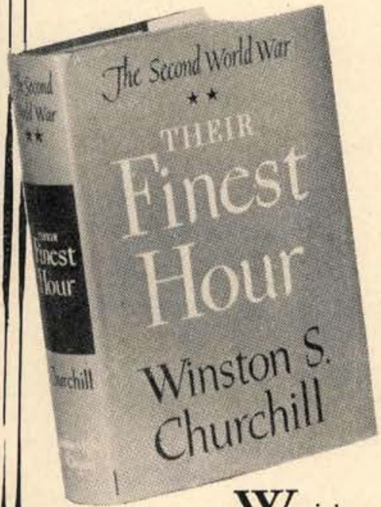

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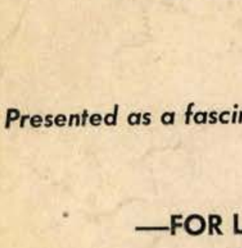

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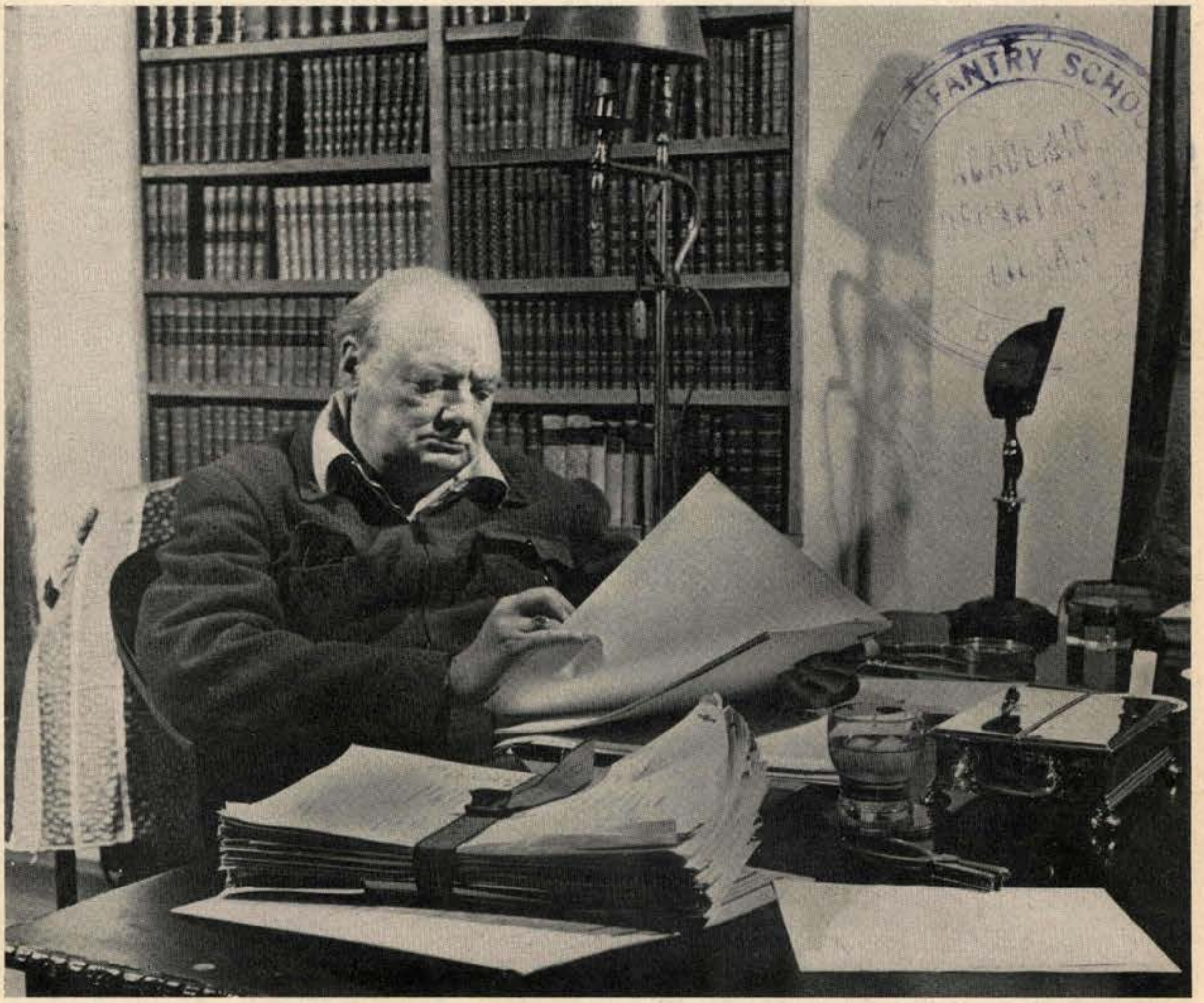

INFANTRY SCHOOL

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"THEIR FINEST HOUR"

An Exclusive Review of the Second Volume in the Churchill Memoirs by

CHARLES COLLINGWOOD (See Page 58)

MAY-JUNE, 1949 VOL. LVIII NO. 3

RECONNOITERING

THERE has been quite a bit of comment lately on top-heavy book sections in service journals. Let's glance at the Book Department of the Association and the Book Section of The Journal.

To get the full view you have to look back some sixty-five years to the founding of the Association, and some sixty-one years to the publication of the first Journal. The basic idea of our predecessors was a good one—to provide Association members with a source of supply of selected professional material, thus furthering the aim of the Association—to promote the professional qualification of the members of the cavalry service. Since that original design is the most objective and the most worthwhile, we subscribe to it still.

A check of recent issues will show that the 80-page number carried ten pages of book material, including reviews, ads and a directory. With the 64-page size begun four issues ago, the Book Section has run eight pages in length. We feel that's about a right proportion.

This book business is a two-way proposition. We're all in this thing together. As the staff, we are here to serve you, the member. In purchasing your books from the Association you are indirectly helping yourself.

THE Book Department functions in the home office of The Journal. The bulk of our business is by mail order. We do little or no over-the-counter business. Although we stock many sure-fire items we do not tie up funds in the stocking of dubious material. Some books we order direct from the publisher, who sends out our order at once under our label.

We receive various publisher discounts, depending for the most part upon the extent to which the item is stocked, and on some few items we receive no discount at all. This is our only source of income over and above subscriptions. The greater the volume of sales, the more money we have to put into the magazine, which is our main purpose in life. While holding a margin of profit for that purpose, we try to pass along to you, as a member-purchaser, the benefits of a small discount, prepaid postage and prepublication price advantages.

YOU may have noticed by this time that the Book Section is slanted primarily as a professional service to you, not as an income source to us. We are bringing to your attention the items which we feel are necessary to further your career and your educational qualification. Although we emphasize that we can, would like to and will furnish you with any book in the English language, don't expect us to plug books solely on the basis of their profit value to us, or their commercial appeal to you.

You will not find us carrying ads and reviews on fiction items, or on general and technical items that miss the pattern. Nor will we play up overstocked items. Our scheme hits military fare, government, history, international relations, languages, foreign policy, geography and related fields.

The value of the Book Section should not be underrated. It has its proportionate worth along with the lead general article of an issue, or with an important technical article or historical narrative. Our cover on this issue is an indication of the significance which we attach to it.

GLANCE over the Book Section for the last six issues of the magazine. There is a definite pattern to the advertising; much thought and preparation have gone into page titles and subject groupings. We have eliminated jacket notices for a feature criticism on an outstanding item. We have added illustrations to that review to make it more interesting. We will continue to have "name" reviewers of outstanding authority in their fields, covering material you will want to know about. We are well under way in this program with the fine criticisms of Harry Butcher, Vera Micheles Dean and Charles Collingwood.

In all of this you have your connection. Let us know how you think we are doing. Are we helping you? Drop us a line telling us what you like. Buy your books from us. If you make careful use of our service we can save you money and give you a better Journal in the bargain.

Occasionally, in looking over the business, we lose heart when we see that Churchill's *The Gathering Storm,* which we featured with a half-page ad and a full-length review in The Journal, sold less copies than the *Kinsey Report,* which drew only passing mention. In the light of these facts, about all we can say is this: we're happy to have your order for Kinsey; we'd prefer to have your order for Churchill.

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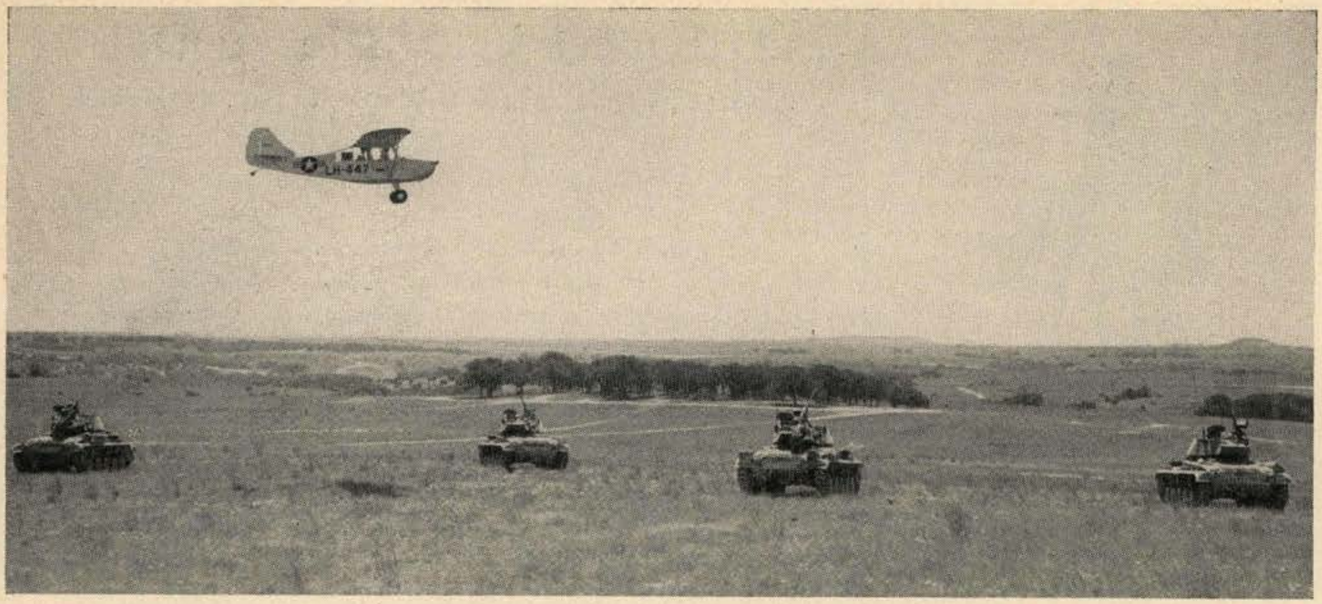


U.S. Army

CARDED

Light Aviation Joins Armored Cavalry

by LIEUTENANT COLONEL ERNEST T. BARCO, JR.

ARMORED CAVALRY has something new! Something it has never had before; something it has always had to borrow; something challenging! That something—*light aviation!*

The recently published Tables of Organization and Equipment for the armored division and the armored cavalry regiment (light) contain this seasoning ingredient for the team recipe. Armored Cavalry can put its hooks into a valuable medium.

There is a wealth of experience with light aviation in many sources on which the arm may draw in adapting this tool for its use. Planes are now provided at headquarters level, separate and distinct from those assigned to the artillery units, and are there for allotment as needed to combat commands, the reconnaissance battalion, and the tank and armored infantry battalions. Keeping that in mind, let's put the eye on equipment and personnel. Some of the facts are startling and revealing.

A light aviation section normally consists of two or more light aircraft, an officer pilot for each plane, and sufficient mechanics and equipment to keep the planes operational. The planes are the light single-engine type which are characterized by their maneuverability and ability to land in short fields and on roads. *The pilots for armored cavalry units are Armored Cavalry Officers.* They are not Air Force officers, and they are not Artillery officers. They are Armored Cavalry officers who have been trained by the Armored Cavalry, and they know and understand the technique, tactics, personnel, and matériel of Armored Cavalry. They are first of all officers of their arm; secondarily they are pilots of organic light aircraft.

The primary responsibility for the efficient and correct operation and employment of the light aircraft section rests with the unit commander. He is as responsible for his pilots and airplanes as he is for his other personnel and matériel. He must know how to employ and maintain his light airplanes just as he knows how to employ and maintain his tanks and trucks. He is as responsible for seeing that proper landing fields are selected for his airplanes as he is for the selection of proper motor parks and tactical positions. He is responsible in that he is a commander; the excuse that he is not a pilot would be exactly that—an excuse. There is no place in Armored Cavalry for the rigid mind, the rutted personality. Flexibility and versatility are not only a virtue here; they are a necessity. Pity the tank battalion commander who would state, "Don't attach any infantry to me; I'm a tanker, and I can't be expected to employ infantry." The Armored Cavalry officer must be prepared to properly employ any type unit that he might expect to command or have attached to his command.

Before going into the manner in which we may use these light aircraft, it is necessary to understand their capabilities and limitations. Armored Cavalry units will be equipped primarily with the "jeep" class of light aircraft, so it is this type which will be discussed here. At the present time the L-16 fills this role. It is a two-place, tandem, high-wing, fabric-covered monoplane powered by a 90 HP engine and capable of approximately 2½ hours' flying without refueling.

Lieutenant Colonel Ernest T. Barco was originally commissioned in the Reserve Corps in mid-1939, entering upon active duty shortly thereafter. He was integrated into the RA in 1946. Originally assigned to the 3d Infantry Division, Colonel Barco participated with that unit in the landings in Africa, next joining General Patton's First Army Corps Staff as Tank and Tank Destroyer Officer in the antitank section. From 1945 to 1948 Colonel Barco was assigned to the Armored Branch, Training Section, of the Office of the Chief, Army Field Forces, and is now Executive Officer of Combat Command B of the Second Armored Division.

To command armor from the air is a thought to capture the imagination of all armored cavalrymen. With this new addition we are able more than ever before to flex the muscles of the "Arm of Decision."

The L-16's, as do all aircraft, require daily preventive maintenance and periodic inspections and overhauls. Due to their small size and relative simplicity of design, normal maintenance of Army light aircraft of the "jeep" class is well within the capabilities of the organizational mechanics.

World War II experience with the Field Artillery light aviation sections proved that aircraft of this type could be operated successfully from small landing strips or roads in the forward areas, and it was found, too, that flights over the front-line area were feasible, and of great value for surveillance and adjustment of fire.

Air-ground communication is accomplished in the Armored Cavalry by mounting the SCR 509 radio set, which has headsets and microphones for both the pilot and observer, in the airplane.

The slow speed, maneuverability, and ability to land in small areas enable the Armored Cavalry airplane to successfully evade attacks by enemy fighter aircraft.

It should be remembered that these light aircraft cannot be operated under certain adverse weather conditions, which include excessively high winds, poor visibility, and low ceilings (low cloud formations).

Another factor to be considered is that of pilot fatigue. The term "pilot fatigue" is essentially the same as combat fatigue, which is familiar to veterans of combat operations; loss of mental alertness and coordination adversely affects the high degree of skill essential to the operation of light aircraft in the field and may result in unnecessary fatalities and loss of matériel unless corrective action is taken.

The tactical employment of light aircraft for Armored Cavalry units is as yet relatively undeveloped, but their potentialities are practically unlimited. To the Artilleryman the light aircraft is primarily an aerial OP for control of artillery fire, but to the Armored Cavalryman its principal use is not as an artillery OP but as a means of maintaining command control of units on the battlefield. This is not to say that they will not sometimes be employed as artillery OP's, because observation and adjustment of artillery fire is no longer restricted to Artillerymen. Ability to adjust artillery fire is expected of all officers of the combat arms. There will be other uses besides command control and adjustment of artillery fire. Some of them are liaison, directing fighter-bombers to targets, adjustment of mortar and assault gunfire, emergency evacuation, reconnaissance and surveillance.

Command control from the air of units engaged in combat is not quite as fantastic as it appears at first glance. A reinforced tank battalion commander engaged with the enemy might well find it to his advantage to control his units from the air where he would be able to view the entire battlefield. On the ground, except in very open country and exceptional cases, his field of vision is limited to a small portion of the battlefield. Some Armored Cavalry officers will immediately counter with the fact that the commander should be where his men can see him. This is true, but he must also be where he can best control his command. His movement on the ground around the battlefield is restricted and difficult if he is at the same time to retain command control. The battalion commander in a tank that becomes engaged in a fire fight is no longer a battalion commander but just another tank commander. If he is in the air his men will possibly not see him but the majority of them will hear him on the radio or see his airplane in the air above them, and they will know he is in it with them.

As an example, a combat command commander who has his command organized into three task forces finds himself with two of these forces engaged at the same time. He feels he will probably have to commit the third very soon. The reports he receives by radio from the other two leave him in doubt as to which is in the greater need of reinforcement, or whether it would be of greater advantage to commit the third in a flanking action. By using his light aircraft he can within a matter of minutes personally observe both actions in progress, and while still in the air give his orders to his third task force. Similarly a combat commander, whose entire command is moving along a single route, can exercise control of his column from the air more efficiently than he can from a vehicle on the ground. Should his advance guard and rear guard both become engaged at the same time he can personally observe and influence both actions in a short period of time. He no longer needs to "sweat it out" by a radio, waiting for information; he can personally see for himself. He can decide more quickly whether to by-pass or overrun enemy resistance, and no matter what part of his column should become engaged he can be on the scene of action in very little time. Should he move his command on two routes that have enemy troops between them he does not have to worry about whether to travel with the right or the left column for he can be with either in a matter of minutes with his light airplane. Should his trains become cut off he can personally survey the situation, and decide how much of his fighting element he must send back to rescue them. Subordinate commanders will find it difficult to explain the whereabouts of the "swarms of enemy tanks" they reported attacking them when the "old man" shows up within five minutes and can only see two or three enemy trucks fleeing in the distance. In short, the combat command commander no longer needs to think of covering his column in terms of hours and crowded roads, but in terms of minutes and over-all observation.

Armored Cavalry light aircraft can be particularly useful for liaison officers. Many a liaison officer of the recent war can recall pounding a bad road all night in a jeep, carrying his message to Garcia, only to find upon his arrival that his treasured news was old stuff, and furthermore, there was a radio message that the C.O. wanted him to get back, and quick. By there nature Armored Cavalry units operate in the enemy rear areas and at great distances. Being "cut off" is more the normal situation than the extraordinary. Under such circumstances it is difficult and frequently impossible to establish vehicular liaison between commands. The light aircraft can not only establish liaison between widely dispersed commands that are separated by pockets of enemy resistance, but it can do so much more quickly than can be done by the quarter-ton truck. Commanders can move easily and rapidly to confer with their subordinate commanders. Liaison officers can make several visits a day to both their headquarters when necessary instead of to one or none. They need no longer be harassed and weary creatures with bloodshot eyes and sore backs. Liaison will not only be speeded up, but it will become more efficient.

U.S. Army

The Air Jeep: L-16 two-place light plane.

The reconnaissance light aircraft can supplement ground reconnaissance elements, and in many cases is able to take over part of their work. The armored cavalry commander need not deplete his main force in order to reconnoiter every little road leading off to his flanks. Much of this may well be covered by his light airplanes; however, light airplanes will probably be of greatest value on reconnaissance by reconnoitering ahead of ground reconnaissance and security elements. Many a commander who served in the recent war can cite the experience of suddenly discovering that he had been marching for some period of time within a few miles of an enemy column fleeing along a parallel road. Many can tell also of overtaking enemy columns marching on the same road. Here the light aircraft should be able to discover the situation before the ground reconnaissance elements arrive, and by so doing, alert the ground reconnaissance and permit the commander to speed up his movement in order to attack the enemy column. The observer in the plane can tell the commander what the enemy column consists of, and also reconnoiter routes for flanking and attacking the column. A commander can make a personal reconnaissance by air prior to issuing his orders for attack.

Many a commander has been faced with the situation of not having sufficient time to make a personal reconnaissance of his entire front on foot or by jeep. By using his light aircraft he can reconnoiter his entire sector in much less time. It is not meant that the light aircraft reconnaissance can completely replace ground reconnaissance, but it will be better than no reconnaissance at all, and whenever possible, should be used to supplement ground reconnaissance. The observer in the air will notice many things unseen by the man on the ground, just as the man on the ground will see some things that the man in the air will not. Each has his limitations, and the two together can get a more complete picture than each separately. Either alone, however, will far surpass the man who only studies a map. The Armored Cavalry commander of the future who finds his time limited must decide whether to make a partial ground reconnaissance or an over-all aerial reconnaissance. He cannot shrug it off and just go by the map. Where he has sufficient time he will be able to observe his area from both the ground and the air, and as a result will get a better picture than ever before.

The Armored Cavalry (light) observer, of course, has his limitations, but the amount and type of information that can be obtained by the trained observer is startling. Just as the Armored Cavalry ground observer must be trained to notice the signs that will give him the information he seeks, so the Armored Cavalry (light) air observer must be trained to observe those signs which will give him the same information. A tree, a house, a stream, a tank, all look different from the air. One cannot learn all these differences overnight. It takes time and training. The trained Armored Cavalry (light) air observer can tell fairly accurately whether ground is firm enough to hold tanks. He can locate possible or actual fords over streams. He can furnish the Engineers valuable information on the condition of existing bridges over streams. He can sometimes spot mine fields, can give accurate reports of road conditions and discover road blocks. He can spot the telltale tracks of enemy troops in hidden ambush, and he can perform a thorough reconnaissance of a new assembly area and the necessary routes. Probably best of all, he can frequently locate the enemy before he gets his point quarter-ton or tank blasted out from under him.

Often during combat there will be periods when a particular front or flank will be comparatively quiet. In fact, it will be too quiet. It will be a quiet like the lull before the storm. Here the Armored Cavalry (light) air observers can provide additional security by maintaining continuous aerial surveillance over the area in question. Such air patrols actually serve a dual purpose. They not only keep the commander informed of activity or the lack of it, in the questioned area, but they also restrict enemy activity there during daylight hours. Our enemies in the last war showed an understandable reluctance to move about in an area that was under aerial surveillance by our light aircraft, primarily because they knew that movement would quickly bring down upon their heads the wrath of our superb artillery.

Missions of surveillance will usually be performed by the light aircraft assigned to the organic or attached armored artillery units. However, as it takes from five to ten airplanes to maintain patrols and still permit performance of other missions, the aircraft of the Armored Cavalry units may be called upon to assist Armored Artillery units.

As previously mentioned, the light aviation sections of the ground forces were originally developed by the Field Artillery for use as aerial OP's. Although every Field Artillery unit has its own light aircraft, the light aircraft of Armored Cavalry units must be prepared to adjust artillery fire of their supporting Field Artillery units. One channel of each of their radios should always be tuned to the fire direction channel of the direct support artillery unit. The Armored Cavalry light air observer must be able to adjust the fire of the artillery, for this is one of the quickest methods for bringing effective massed fire to bear on observed enemy troops.

The Field Artillery learned a great deal about the employment of their light aircraft during the recent war. All of the other ground arms can profit, if they will, from the extensive and sometimes bitter experiences of the Field Artillery in developing this infant. Armored Cavalry is potentially one of the greatest users of light aircraft. To get the maximum value from its light aircraft, the Armored Cavalry must profit not only from the experience of the Field Artillery, but it must adapt this new tool of warfare to its own particular needs. Armored Cavalry commanders must use their light aviation sections during training. They must get them off of the large airfields and on to tactical strips near their command posts. They must have their airplanes in the air and over their units whenever they are in the field. They must get to know and appreciate the problems incident to operating and maintaining a light aviation section, and most important of all, they must learn to obtain the maximum effectiveness from the tactical employment of their light aircraft.

U.S. Army

Thinking ahead: "Aggressor" uses them too on current maneuvers.

The advent of the light helicopter and the continued great strides of improvement by the light aircraft industry of our country, hold great promise for the future. It is entirely possible that, as in the recent war commanders from company level to Army were continually getting in and out of jeeps in order to be where they were most needed, the commanders of the future will be getting in and out of their "air jeeps" to be where they are needed.

Missionaries of Unification

by COLONEL G. C. MUDGETT

TUCKED away in a small, converted naval receiving station of the last war at Norfolk, Virginia, lies a missionary-type institution supported entirely from public appropriated funds and the good will of the three armed services.

The charter for this institution, called the Armed Forces Staff College, dated 28 June 1946, and written by the Joint Chiefs of Staff reads as follows: "To train selected officers of the Armed Forces in Joint Operations."

Since its establishment, this institution has graduated four classes and placed in the field some 600 missionaries about equally divided between the Army, Navy and Air Force. This is at the rate of 300 a year with the prospect of raising this figure by 60 next year.

The officers of the three services entering this institution represent those who are successfully rising in their own service under rigid selection systems. The majority are in the grades of Lieutenant Colonel in the Army, Commander in the Navy, and Colonel in the younger service, the Air Force. All of them are well established in their respective services. both through experience and education, much of it gained through active war experience. However, most of them fought the war in positions where they were involved primarily with their own service problems, and they gained little of joint experience other than the knowledge that the other two services were in the fight and carrying a man-sized load.

Student officers are permitted to bring their families to this college where they live much closer together than in an average community. Sixteen families occupy each of the converted barracks. The average family has two school-age children, and invariably a dog; so by necessity they live an intimate life that extends far beyond the purely classroom professional contacts of the officers themselves. The fact that the families depart with many a new friend in another service speaks as well for their dispositions as it does for the benefit of unification.

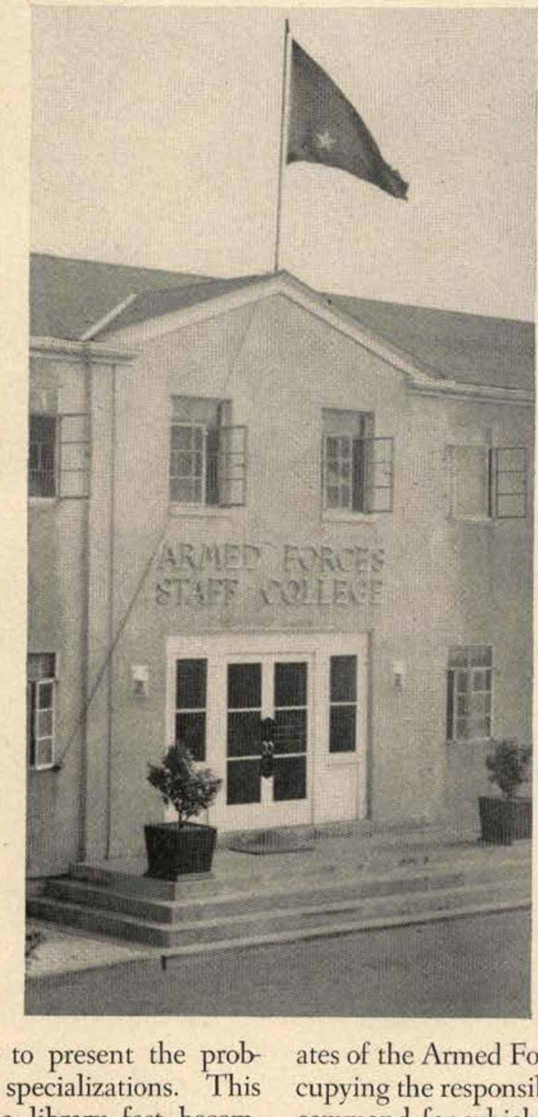
These mature students start this postgraduate course with a condensed orientation phase, covering the capabilities and limitations of each service, and designed to insure a proper understanding of the problems and requirements of each service. They are taught by a three-service faculty who consider themselves more as advanced students than as instructors. In addition to faculty instruction, outstanding officers representing each service appear as guest speakers during this orientation phase and present, with no thought of service propaganda, a sincere resumé of the current and future problems and plans of their particular service.

Following the orientation phase the students are launched into the mechanics and technique of joint operations. In this process, operations from the last war are used sparingly as examples. It is well recognized that these operations were conceived out of sheer necessity and executed, in most cases, under conditions of stress, unequalled in former military operations, and always influenced greatly by a constant need for speed, and a continual shortage of personnel and equipment which forces much improvisation in both organization and methods.

In this struggle to develop proper technique, joint operations from all theaters of the last war have been placed on the college laboratory table. They have been dissected in detail and exposed to a post-mortem treatment designed to determine the elements that led to a smooth operating team, as well as those elements which caused friction and misunderstanding and therefore require re-examination to insure that future joint operations will fully utilize the maximum capabilities of each service.

Perhaps the best example of the effect of this effort is reflected in the constant revision of school texts. One of the principal texts, the "Staff Officers' Manual for Joint Operations" has been revised with each class since its original publication. Each change has been designed primarily to clarify the terminology in order that it express the thought desired in such clarity as to eliminate its interpretation in three different manners, a common error caused generally by peculiarities which have grown up in the service language. A dictionary of "United States Mili-

The service school system is a primary medium for promoting concert of effort among the services. Advances are manifest in this story on the Armed Forces Staff College.



tary Terms for Joint Usage," recently published, is assisting materially in this effort, but the writing of military directives, in absolute clarity for use by all three services, still remains the biggest bugaboo to a Joint Staff Officer.

A large portion of the student's time is devoted to work in small committees, or on small joint staffs, directed toward the solution of realistically envisaged joint operational problems of the future. Each service is proportionally represented in these small groups, and the student chairman or student Chief of Staff is rotated regularly between the three services. This daily rubbing of elbows around a conference table, in an attempt to clarify plans or directives being formulated for joint use, soon impresses indelibly upon the students the capabilities and limitations as well as the problems and requirements of all three services.

Being fully cognizant of the fact that military factors are now closely interwoven into the web of national policy along with political, economic, technological and psychological factors, the college secures many individuals prominent in these fields to present the problems of their respective specializations. This wide coverage, aided by a library fast becoming a treasure house, provides these officers with their first real introduction to the vast fields bordering on, or closely interwoven into their own profession and with which military leaders of the future must be fully acquainted.

Upon graduation, these officers scatter to the four corners of the world. Some go to positions on existing joint staffs—this number, unfortunately, is limited, as joint commands in peace are not numerous. Many go to duty with their respective Departments in Washington, where they are beginning to provide an educated joint outlook and thought—an entering joint wedge of present and future value to unification. The majority, however, return to normal service assignments where they become needed counterweights in balancing the scales between unilateral and joint action.

Experience gained in war dissipates rapidly. A glance at the active list today, less than four years since the end of the war, discloses a heavy attrition rate in the leaders of World War II, especially those who were senior enough to exercise joint command. It is the primary function of this institution to compensate for this loss of experience through the only medium available to the armed services in peace—theoretical and practical training. In a short time the graduates of the Armed Forces Staff College will be occupying the responsible positions in both staff and command for which they were fittingly trained. When this time arrives, it is believed the missionaries will have spread the gospel of joint action to such an extent that Americans will find unification has become a fact in being as well as in law.

U. S. Army Photo

ARMORED PERSONNEL CARRIERS

by LIEUTENANT COLONEL GEORGE B. PICKETT, JR.

CARDED

***"... to save the cavalry for the end of the battle shows ignorance of the power of the combined charges of infantry and cavalry. . . ."*—Napoleon.**

YES, Napoleon like all other great Captains strived to combine the shock effect of heavy cavalry with the staying power of infantry. In order to accomplish this effect on the battlefield, he organized special infantry units, called *Voltigeurs*. The *Voltigeurs* derived their name from their method of advance. Just before the heavy cavalry, the Dragoons would charge; an infantryman would vault on the rump of the horse and hold tightly to the rider while the horse galloped into the enemy lines. Once the enemy lines were reached, the infantryman jumped off and supported the horseman. Naturally this method was not too successful, primarily due to the limitations of the personnel carrier, which had a 100% overload and did not react very favorably. However, Napoleon did achieve success in combining heavy cavalry and infantry charges by having the infantry move in from one direction while the cavalry converged on the same point from a different direction. The charges were echeloned with respect to time so that the infantry arrived as soon as the cavalry had delivered its blow. In modern warfare, tanks have replaced the heavy cavalry and infantrymen in armored personnel carriers have replaced the *Voltigeurs* of the Napoleonic era. Let us examine the armored personnel carrier and its role in modern battle.

Lessons of World War II

Oran—Sicily—Avranches—The Saar—Bastogne—Houffalize—Han-

This article is a sequel to "Tin Can Doughboys" which appeared in the last issue of our Journal. It is an excellent discussion of the problems of increasing Infantry mobility to a par with Armor's maneuverability. Thus developing a more effective combat team.

au—Chatres—Kelburg—St. Vith are a few of thousands of names that will live forever in the hearts of armored infantrymen. Two significant facts are evident from a study of all armored infantry combat experience. First, the half-track of World War II does not have the same cross-country mobility as a tank. In order to perform his mission, the armored infantryman and his carrier must be able to accompany a tank unit anywhere on the battlefield. To accomplish this, the armored infantryman needs a full tracked vehicle having comparable mobility with the tank. The second significant fact now realized is that the armored personnel carrier needs overhead protection from air bursts. In World War II the American Army had exclusive possession of the VT fuze. German artillery time fire was not very effective against the Allies. Questioning of German PWs clearly indicated their sharp dislike and dread of the air burst, and the VT fuze in particular. But although the American Army introduced the VT fuze to warfare, it can expect to encounter a like weapon in possession of the enemy in any possible future war. However, even if the enemy did not possess a VT type fuze, it still would be desirable to have overhead protection since it enables our armored infantry to move under a protective cover of friendly time fire. There are many cases in World War II where tank-armored infantry teams followed their supporting fires so closely that the armored infantry suffered casualties in the half-tracks from these friendly fires. Yet these losses were negligible compared to what they would have been if the supporting fires had not been followed so closely. Naturally a carrier with overhead protection would have reduced losses of that type.

German Experience in World War II

The experience of the German Panzer Grenadiers during World War II was similar to our own. The Germans were the first to develop the half-track. Our own army improved on the German version; but the use of a half-track armored personnel carrier was conceived by the Wehrmacht. We have already seen that the half-track does not have the same degree of cross-country mobility as the tank but the Germans did not realize the full implication of this deficiency until too late.

The overwhelming successes of the Panzers, supported by the half-track-borne Panzer Grenadiers, appear to have startled the Germans as much in May and June 1940 as the British and French. One condition materially assisted the Germans. This was the adequacy of the all-weather, hard-surfaced roads in Western Europe. Since the rapid advances of the Panzer Divisions were made on these roads, the lack of cross-country mobility of the half-track did not make itself sufficiently well known to the Germans to have them take any corrective measures. As a matter of fact, there appears to be no complaint against the mobility of the half-track at all during the campaign in the West in 1940. Also the Afrika Korps appears to have had only a small degree of difficulty with the half-track.

The lack of cross-country mobility of the half-track first became serious when operation "BARBAROSSA" crossed the old Polish-Russian frontier in July 1941. During the early phases of the offensive into Russia in 1941, the Germans found conditions favorable to their Panzers. As soon as the roads of Poland disappeared and the roads, or lack of roads, of Russia appeared on the map (most of them existed only on the map) the half-track presented a serious problem. It was found that the full tracked vehicles, the tanks, could cross the wet sand and gumbo mud of the Russian battlefields; but the wheeled and half-track transport could not. The problem became acute for the tanks; although they could still advance, they could not receive the full support of the Panzer Grenadiers. Initially the problem was solved by having the armored infantry ride the tanks but this method of transport had several tactical weaknesses. First, the formation of the PZ-PZ Gren

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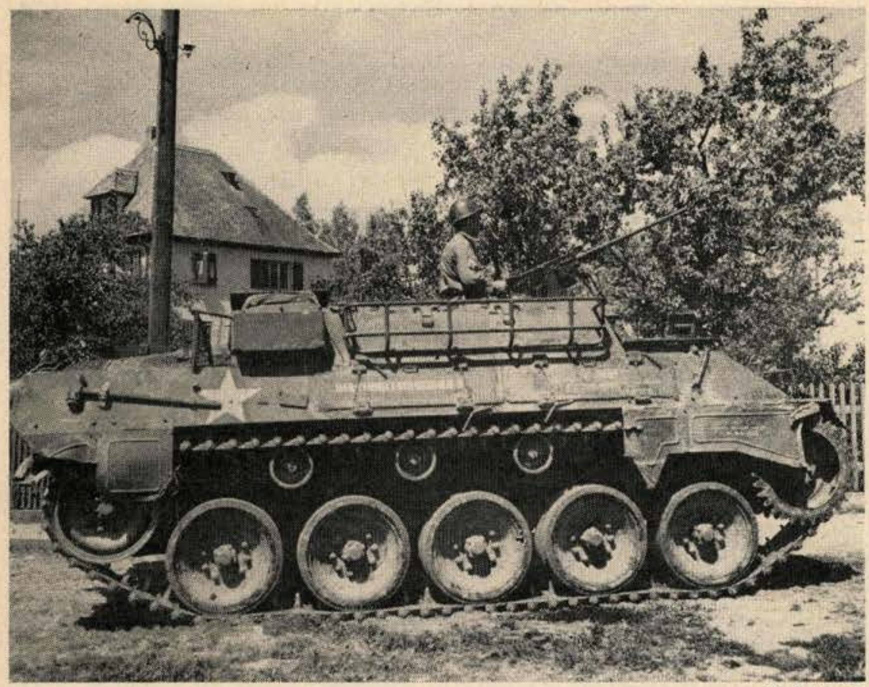
He is a graduate of The Command and General Staff College. During World War II he was a staff officer of CCB, and the Executive officer of a tank battalion in the Eleventh Armored Division from 1942 through 1945. He also commanded an Armored Infantry Battalion in the Sixteenth Armored Division and spent two years in the army of occupation in Germany.

He is now, an Armored Cavalry Officer, assigned as an instructor of Tactics, at The Infantry School, Ft. Benning, Georgia.



U. S. Army

German Experimental Personnel Carrier

9. / see p. 12

teams (kamp gruppes) was limited to teamed companies since transport rather than tactical requirements governed the formation of the teams. Secondly, the formation of the armored column was inflexible since transportation rather than tactical considerations governed the positioning of PZ Gren in the column. Thirdly, many isolated Russian delaying groups inflicted heavy casualties on the tank-borne infantry with small-arms fire. The Germans either had to reduce this opposition or take excessive losses in bypassing them.

When the ground was sufficiently hard and not too rough, the half-tracks were used. Even under these conditions, the tanks could have made more speed. The serious difficulty was the inability to supply either the PZ or PZ Gren units due to the lack of cross-country mobility of the wheeled cargo vehicles. In spite of all these difficulties, the German Armor and Armored Infantry achieved outstanding successes during the advance into Russia.

The real debacle occurred after Stalingrad. No longer having the initiative, the Germans were forced to withdraw rapidly to avoid destruction. They no longer were able to wait until the ground hardened or the sun dried the fields. Consequently the losses in half-track and wheeled transport were staggering. An analysis of opinions expressed by German Officers from the grade of Lieutenant to Field Marshal indicates the universal belief that full tracked carriers for their armored infantry would have made their Panzers far more effective and would have enabled them to supply their forces far more efficiently. Even with the greater fuel requirements for the full tracked vehicles, many German senior officers have expressed the opinion that these full tracked vehicles may have turned the tide in Russia by preventing the bogging down in late 1941.

Types of Carriers

The lessons of World War II, both Allied and Enemy, have not been disregarded. A new type personnel carrier which corrects the two outstanding deficiencies of the half-track carriers of World War II has been developed. This vehicle is full tracked, completely enclosed with armor, and has the same cross-country mobility as a tank. Doors are provided into the personnel compartment through which the occupants may mount and dismount simultaneously. Primary armament is limited to machine guns. Rocket launchers are provided as secondary armament.

There has always been a requirement for a full track, squad size, armored personnel carrier capable of accompanying tanks cross country in the attack. However, there are two schools of thought regarding the weight and amount of armor for the vehicle; the light armored carrier, and the heavy (or medium) armored carrier schools. Both schools realize that the basic concept of tank-armored infantry team tactics in the armored division is based on the full tracked, armored, squad size carrier; yet they differ with respect to its armor. The question revolves around the amount of protection needed for the occupants. A compromise solution which provides sufficient armor to enable the vehicle to accompany tanks on the battlefield and still be speedy enough to permit them to close as rapidly with the enemy as the tanks seems indicated.

The T/O & E vehicle provided for use by armored infantry at present is the M44 Armored Utility Vehicle. It has characteristics of the squad-type carrier which we described earlier, except it is too large, carrying 24 men in the personnel compartment. This large personnel compartment is one of the outstanding disadvantages of this vehicle in use by armored infantry units.

Factors Affecting the Employment of Armored Personnel Carriers

The carriers' weight and size increase the difficulty of its movement over unfavorable terrain. Bridges and soft ground are reconnoitered to insure that they will support the vehicle; it is frequently necessary to reinforce bridges or to corduroy stretches of soft terrain. For river crossings and amphibious landings, it is necessary to have boats or rafts capable of ferrying the carriers.

The large silhouette of the carrier makes it relatively easy to detect, especially when it is moving in the open or on the skyline.

The noise of the engine, tracks, and power train may warn an alert enemy. This noise can be heard for several miles—especially at night. The armor restricts the field of view of the personnel when all hatches and doors are closed.

There are other factors which are not inherent in the carrier itself. Mines can be easily laid by the enemy and artificial obstacles can be erected. As in the case of all armored units *terrain* is an important factor in the employment of armored carriers. The possibility of having to cross steep slopes, stumps, terrain containing large boulders, and swamps or marshy ground are terrain factors to be considered in planning an operation. The armored vehicles make it necessary to have firm ground in all weather conditions. Routes of advance are selected which permit the passage of large numbers of armored vehicles without becoming impassable. The effect of rain, sleet, and snow on terrain must also be considered.

U. S. Army

Armored Personnel Carrier on Eastern Front

Weather is very important for it affects terrain and trafficability of routes. For example, during the Ardennes campaign a snowstorm impeded a tank-armored infantry movement much more effectively than the enemy. At 302200 December 1944, the 63d Armored Infantry Battalion and 42d Tank Battalion began a night march from Remagne to Morhet, roughly a distance of ten miles. By 2230, a heavy snowstorm fell in the area over which the units were moving. Roads soon became icy; tanks and half-tracks slid off the icy roads into the ditches and overturned. Some vehicles became lost. The wintry wind bit deep into the shivering soldiers trying to keep their feet, hands, and ears from freezing. What would have been a simple one-hour march was turned into a nightmare by the blizzard. Men walking were able to make greater speed than the armored vehicles. The units took eleven hours to complete the movement.

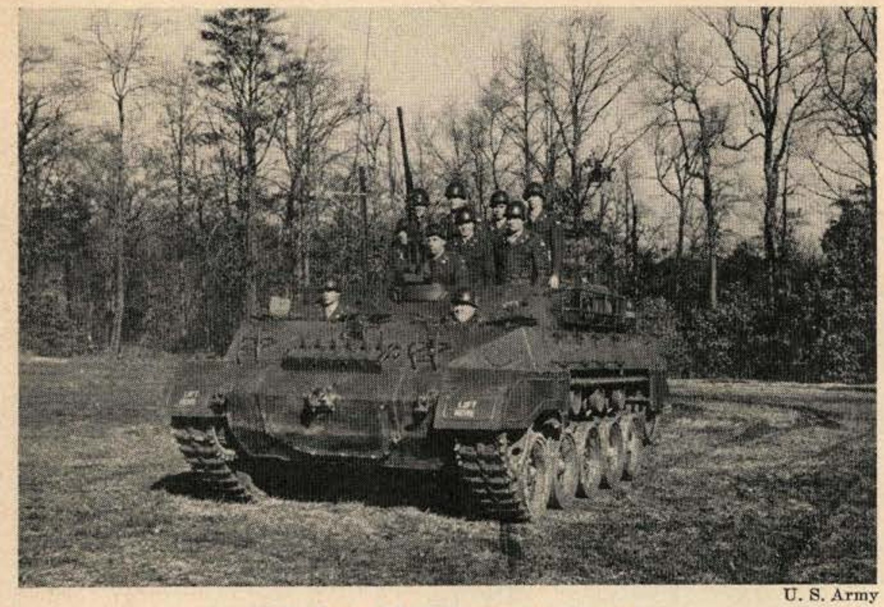
U. S. Army

Armored Half Track—In Germany

The effect of rain on terrain even in training cannot be overlooked. On 3-4 December 1941, the 6th Armored Infantry Regiment, 1st U.S. Armored Division was returning to Fort Knox, Kentucky after a 3½ months maneuver in Louisiana and the Carolinas. The regiment went into bivouac on a hillside outside of Tate, Georgia, at about 1700, 3 December. It rained all night, a cold, bitter, and penetrating rain which turned the bivouac area into a sea of mud. Over half of the vehicles of Company F had to be winched out to the road, which was still able to support a heavy vehicle.

Tactical Employment

The basic concept of the tactics of the armored division is based



U. S. Army

U. S. Army M-39 Personnel Carrier

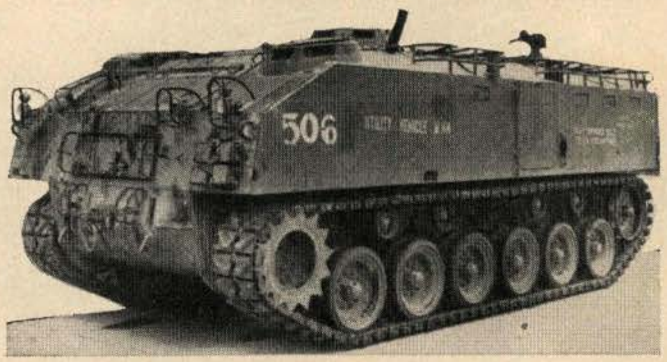
upon supporting the advance of the tanks with (carrier-borne) armored infantry. The carrier enables the armored infantry to accompany the tank units on the battlefield, dismounting to support the tanks when necessary or to mop up and organize the objective. However, the advent of the VT fuze makes it mandatory that all infantry have some protected means of arriving at assault positions. Either the enemy's artillery must be silenced by friendly counter battery or armored carriers must be employed to transport dismounted personnel, including infantry, engineers, and any others within artillery range, to the point at which they begin to fight. Due to the threat of enemy armor, these carrier-borne elements must be protected by friendly tank units. We know that 41% of all battle casualties in Italy occurred between the line of departure and the assault position. Most of these were due to small-arms fire and fragments. Transport the doughboy to his assault position in an armored personnel carrier and you materially reduce these casualties.

The armored personnel carrier also is used to transport the rifle squads of reconnaissance platoons. This enables the rifle squad and the tank section to function as a small tank-armored infantry team.

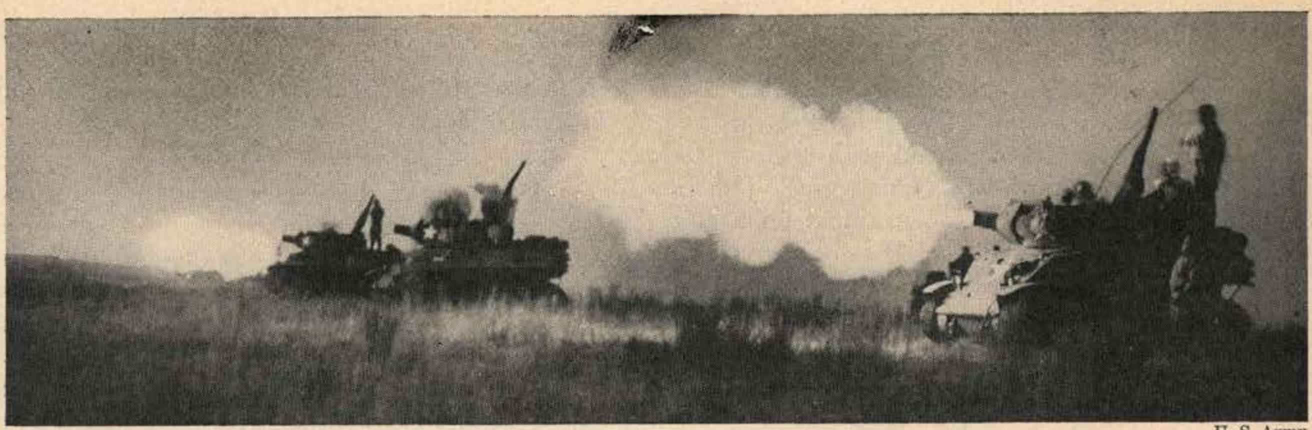
Carriers may be provided in two ways; either by being made organic or by being kept in pools. Carriers which are used to transport elements of the infantry division on occasion can be kept in Corps or Army Pools for there will never be enough carriers to convert all infantry to armored infantry, but carriers for the infantry and engineers of the armored division must be organically assigned to the armored infantry and armored engineer battalions. In theory the pooling principle is the most efficient means of providing transportation. However, this principle is not applicable to the tank-armored infantry team in the armored division. The success of tank-armored infantry team action is dependent upon perfect teamwork between the tank crew, the armored infantry rifle squad, and the driver of the armored personnel carrier. This teamwork cannot be developed overnight on a battlefield, but is a result of personal friendships (at least acquaintances) and mutual confidence developed throughout the entire training period and later during combat. However, this teamwork is not essential in the infantry regiments where the carrier is used only as armor-protected transport to the edge of the battlefield.

We've heard a lot about ABC warfare (atom, biologicals, chemicals), but its nature seems to indicate that it will have no great effect upon the carrier-borne soldier in a future war. Such thought as we can give the subject must be mainly speculation. Based on sound estimate and experience, it seems logical to conclude that the weapon that will have the greatest effect on close combat in the future is the VT fuze or a fuze of that type, with the added and constant threat of chemical attack. The armored personnel carrier gives the soldier of the future an even break against the VT fuze; but he must be thoroughly indoctrinated in the capabilities of the ABC warfare and the possible effect of these weapons if used against him.

M-44 ARMORED UTILITY VEHICLE



The M-44 is a completely closed-in vehicle with all around protection for the armored infantryman from small arms and shrapnel.



U. S. Army

ARMORED ARTILLERY IN THE TEAM

by MAJOR RALPH A. CLICK

GENERAL George S. Patton, while describing a particular action at the outset of World War II, is credited with having remarked that "by methods known only to God and the Artillery, fire was placed on the target." This mystery surrounding field artillery techniques at the beginning of the war, caused many commanders at all levels to fail to fully realize the tremendous fire potential of their supporting artillery. They let the mystery of its techniques also build into a mystery of its employment and the full utilization of its fire power. The effect of the artillery's fire power was not integrated into their planning except in the most general terms. However, by the end of the war, most combat officers realized how much artillery fire had contributed to success on the battlefield and had picked up a basic understanding of the employment of artillery. By means of a simplified procedure for adjusting fire, many tankers and infantrymen had called for and adjusted fire in emergencies. However fire planning and the employment of forward observers and liaison officers by the supported units, frequently did not make full use of the capabilities of the artillery.

Artillerymen also learned, as a result of wartime experience, that their procedure for the adjustment of fire had to be simplified until a soldier of any combat arm could grasp the fundamentals with a minimum of training, and bring effective artillery fire to aid the accomplishment of his mission. Since the end of hostilities, much work has been done to this end. Obviously a more intimate knowledge of the principles of artillery employment and technique, beyond a simple request for fire, must be a part of the equipment of commanders of all combat echelons in the armored division. Intimate association must exist between tank, armored infantry, armored engineers, and armored artillery if co-operation—the combined arms teamwork—is to be achieved. This co-operation must be based upon an understanding of the employment and capabilities of each by the other.

It must be fully realized that an armored field artillery battalion is a fighting unit. Here lies its principal difference from the artillery of the infantry division and other towed artillery. You will find no outstanding differences from other artillery in a search of Tables of Organization, training procedures, or written doctrine on its employment. Rather it might be said that armored artillery is a "state of mind." Its aggressive spirit for forward movement and contact with the enemy make it an almost different arm, for it must exhibit the same characteristics of fire power, mobility and shock action expected of other members of the combined arms team. Its commanders must be progressive and ingenious. No rigid set of operating procedures are applicable to its functioning, for it must be able to deliver fire with the utmost speed under all conditions and situations, and be able to defend itself from hostile attack while in firing position or on the march. It may be called upon to accompany tanks without supporting infantry. These capabilities are not the result of special equipment alone but must be the result of aggressive thought and action on the part of its commanders.

New Organization

The fire power of the armored artillery in the armored division has been greatly increased under the Tables of Organization of 8 October 1948. (See Fig. 1.) The addition of an armored medium field artillery battalion (155mm, self-propelled howitzers) and a self-propelled antiaircraft artillery (automatic

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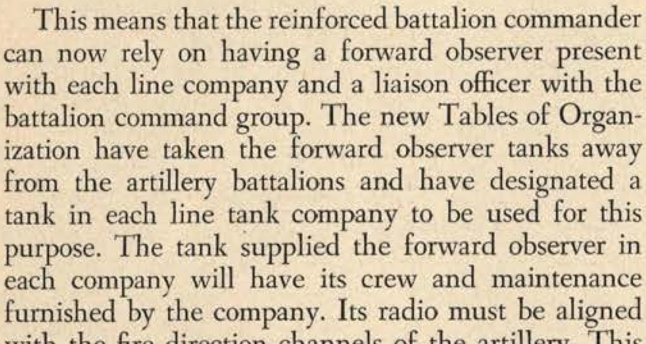
weapons) battalion provides missing parts that were necessary for the self-sufficiency of the division. The antiaircraft battalion is equipped with full tracked gun carriages, mounting twin 40mm guns, and the familiar quadruple caliber .50, mounted on a half-tracked vehicle. This latter vehicle is being replaced with a full track mount which will enable the antiaircraft artillery to accompany tanks over any terrain. The medium field artillery battalion furnishes added depth of fire and punch lacking under the old organization. To make up for this shortage during the past war, towed 155mm howitzer battalions were normally attached to the division but they sometimes lacked the mobility and organization necessary most effectively to take their place in the combined arms team.

The most important changes in armored field artillery organization from a tank or armored infantry battalion commander's standpoint are the increases in the number of forward observers and liaison officers available in the artillery of the armored division for assignment to supported units.

	Old T/O	*New T/O*
Liaison Officers	3	14
Forward Observers	9	29

This means that the reinforced battalion commander can now rely on having a forward observer present with each line company and a liaison officer with the battalion command group. The new Tables of Organization have taken the forward observer tanks away from the artillery battalions and have designated a tank in each line tank company to be used for this purpose. The tank supplied the forward observer in each company will have its crew and maintenance furnished by the company. Its radio must be aligned with the fire direction channels of the artillery. This method of furnishing transportation for the forward observer will relieve the field artillery battalion of training tank crews although it places an added responsibility upon the tank unit. However, the presence of a forward observer with the tank unit is no longer dependent upon the supply of forward observer tanks from the artillery battalion. The forward observer with an infantry company will continue to supply his own transportation.



Chart—Fig. 1

Employment

The employment of the armored artillery of the armored division must follow the requirement that the tremendous fire power of the division is always forward where it can be concentrated at a decisive point to effect the desired knock-out punch to the enemy. This clearly requires that the artillery be kept forward, particularly in the attack, and that its communications and liaison with the units it supports be broad and flexible to secure the necessary co-operation and co-ordination. The broad nature of the communications system of the artillery, with forward observers and liaison officers with all combat units, offers a great aid to the flexibility of assignment and to operations of the armored division.

To the reinforced battalion commander, the important fact in armored artillery organization and employment is that he can rely on having a light armored field artillery battalion working with him. Whether this artillery is in direct support of his battalion, or of the combat command as a whole, the planning of operations and the fire support he will receive will not change. In considering the artillery support available to the reinforced battalion, it must be emphasized that this support is not limited to the fire power of the 18 howitzers of this direct support battalion, but includes the fire power of all artillery within range. This available fire power can include the other artillery battalions of the armored division, artillery of adjacent divisions, and corps artillery.

In the attack, the armored artillery of the division is normally assigned to combat commands with direct support roles, but kept under division artillery control for the massing of fires. This arrangement is continued during the initial phases of an attack. When a penetration has been effected, field artillery battalions in support of the leading combat command are then attached directly to the combat command. When and if the second combat command is committed, its supporting artillery battalions are attached also. During the exploitation phase of an attack, direct support artillery must be kept well forward in the march column in order that its fire power may at all times be available to the forward elements. An armored field artillery battery normally marches with the advance tank-armored infantry team with the remainder of the direct support artillery battalion following the second tank-infantry team. The advance battery can furnish fire support for the leading team and if resistance is encountered which will require the employment of the remainder of the reinforced battalion, the entire artillery battalion will go into firing position near the advance battery. By having the artillery forward, it can cover the deployment of the reinforced battalion and furnish immediate fire support in any direction.

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M-12, 155mm all purpose weapon, on M-3 tank chassis, making it a fast highly mobile weapon.

In defensive situations, the armored artillery is normally kept under division artillery control, but is assigned direct support roles to combat commands. Under division artillery control, the massing of all artillery fire is more quickly and effectively accomplished. In a mobile defense, the armored artillery of the division, like the other members of the combined arms team, fights as it would in the attack. In a delaying action or withdrawal, the armored artillery plays an even more important role in the operations of the division. It is one of the last units to be displaced to the rear, covering with its fire the withdrawal or disengagement of the other members of the combined arms team.

Special operations such as river crossings or night attacks do not alter or greatly affect the employment of the armored artillery or the effectiveness of its fire support. In such situations, its fire support must be very carefully planned so that it may be of the greatest assistance to the combined arms team. Tanks may attack without infantry, or infantry without tanks, but artillery support should be present in either case.

155mm Howitzer Motor Carriage, M-41.

The armored division fights with combined arms teams of tanks, armored infantry, armored engineers and armored artillery. Each element complements and supplements the other to aid in the forward movement of the team through the employment of its own capabilities. A tank battalion and an armored infantry battalion are normally joined and two teams, with both tanks and armored infantry, are formed. One team is commanded by the tank battalion commander and the other by the infantry commander. These combined arms teams are termed reinforced battalions, and their composition may have an equal or different tank-armored infantry ratio. This intermarriage of the two arms is carried down through the smaller combat units. A light armored field artillery battalion is normally assigned a direct support mission to one of these reinforced battalions. Because of the supporting nature of the artillery in this team, its commander must be continually informed of the plans and progress of every operation of the team, to ensure that artillery support will be available when needed. For this reason, the commander of the direct support artillery battalion should be present with the reinforced battalion commander during both the planning and execution phases of any operation.

Since it is impossible for the commander of the direct support artillery battalion to be always present at the headquarters of the reinforced battalion, a liaison officer from the artillery battalion is furnished the supported unit. This officer is a well qualified artilleryman and a specialist in his duties of providing artillery "know-how" and support to the battalion. He must be regarded in this light by its commander and staff, and his aid must be used in the formation and execution of plans. His place is with the commander of the reinforced battalion and his duties are those of a special staff officer. The liaison officer must keep his own unit continually informed of the plans of the reinforced battalion and exercise general supervision over the assignment and functioning of the artillery forward observers attached to it.

As mentioned previously, forward observers from the direct support artillery battalion will normally be sent to each line company of the reinforced battalion. These officers are the seeing-eye dogs of the artillery by which its fire power is most effectively brought to the aid of the combined arms team. The most advantageous position for the forward observer is with the reinforced company commander for he must keep continually informed as to the plans and progress of the company mission. Every effort will be made by the artillery battalion to supply the best officer available to perform the mission as forward observer. Close association during training of these officers with those of the tank and armored infantry battalions will pay big dividends on the field of battle.

The reinforced battalion has a definite responsibility for the reception and considerate treatment of these officers from the artillery. They are the tangible evidence of the artillery in the forward combat elements of the team, and their value to the supported units depends upon the manner in which they are treated and used. The tank and crew furnished the observer should be as good as any in the tank company if he is to function effectively. This intangible support is largely the responsibility of the individual officers of the reinforced unit.

Developing the Fire Plan

The employment of the artillery of the armored division, like that of the tank and infantry units, must be characterized by deliberate planning followed by violent execution. In furtherance of this principle, the fire support of the artillery must be carefully planned and co-ordinated with the efforts of the other members of the combined arms team. This plan for the employment of the artillery's fire power is developed by the reinforced battalion commander and the commander of the direct support artillery battalion. Integrated into the plan must be tactical air support when available and the supporting weapons of the reinforced battalion itself. It should be mentioned that the technique of planning for the utilization of the fire power of artillery is the same regardless of whether the artillery is from the armored division or is towed artillery. However the details of its execution by armored artillery may be different.

Twin 40mm Bofors Gun Motor Carriage, M-9.

An effective fire plan for an attack should be planned so that artillery fire will:

a. Deny effective observation to the enemy.
b. Neutralize the objective and thereby reduce losses by assaulting troops.
c. Isolate the objective to facilitate its capture and hinder the enemy from reinforcing or counterattacking the position.

In defense, the avenues of approach by the enemy must be anticipated and fires planned that will delay or blunt his attack until a counterattack by our forces can be launched. Important to the reinforced battalion commander in formulating this fire plan are the capabilities and limitations of the artillery support available, insofar as the number and types of artillery battalions available, ammunition restrictions, if any, and the effective ranges of the supporting battalions. The firing of artillery preparation prior to attack is considered desirable if ammunition is available. The resulting loss in secrecy is not normally considered as important as the devastation and confusion created in the enemy position.

For his planning, the artillery battalion commander or his liaison officer will need to be briefed on the following by the reinforced battalion:

a. Detailed information of the enemy.
b. Location of forward elements, assembly areas, and attack positions of the supported units.
c. Areas from which difficulties are expected.
d. General location, time, duration, and priority of fires on known targets, the objective, and protective fires.
e. Method of calling for, lifting, and shifting of fires.
f. Special requirements, such as smoke or illumination.

The fire plan when developed will normally consist of a number of concentrations which can be fired on call from the reinforced battalion as the engagement progresses. Upon completion of the fire plan by the commanders, its details must be distributed to all supported units. It must be emphasized that this plan is flexible and can be changed easily as the operation progresses.

Executing the Plan

Because of the uncontrollable factors and uncertainties always present in armored warfare, it is preferable for details of the fire plan to be set in action on call from the reinforced battalion commanders and lifted by a forward observer, rather than to have the fire plan executed on a prearranged time schedule. Like the plans of the reinforced battalion, the fire plan for the artillery must be reviewed and changed if necessary as the action progresses. It is of vital importance that the artillery battalion commander be kept up to date on the plans and progress of supported units by his liaison officer so that he may plan for the displacement of his artillery to keep within range.

The forward observer with the reinforced company must always be alert for the resistance that is encountered at points where no prearranged fires have been planned. His action might be compared to a defensive back in a football game. He places the weight of his fires on targets and areas that become important as the action progresses. His fires must be co-ordinated with the reinforced company and must be ones which will aid the advance of the team. This means that he must not fritter ammunition and time away on a few infantry on a flank but on the other hand should request heavy volumes of fire when he finally gets a

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M-7, Self-propelled Field Artillery and "Grasshopper" Observation Plane on maneuvers.

good target or suspected area. The reinforced company commander should carefully consider these last statements, for his forward observer will normally fire all missions requested by the supported unit.

Almost every tank radio in the armored division has one of its channels aligned to the division artillery fire direction net. In event the forward observer becomes a casualty or no observer is present when needed, almost everyone has communications with the artillery and can call for and adjust artillery fire. If tankers and infantrymen can send the WHAT and WHERE with respect to a target and adjust the fire in the same manner as for their tank guns, mortars or assault guns, effective artillery fire can be brought to aid the unit if there is artillery within range.

It is hardly necessary to review the importance of the artillery liaison airplane to the forward movement of the armored division. Under the new Tables of Organization their numbers have been more than doubled in the division as a whole. Combat units can rely on the presence of these "air eyes" at the front of the attacking column or keeping up a constant surveillance of the enemy in a defensive position.

Antiaircraft Artillery

The employment of the antiaircraft artillery battalion of the armored division is considered here as a separate subject. Because of the multitude of tasks required of it, elements of the battalion are widely scattered throughout the division. Priorities for the utilization of the elements of the antiaircraft artillery are established by the commanders of the units to which the elements are attached.

In the attack, the antiaircraft batteries are normally attached to combat commands, based on the size and the elements of composition of the commands. Within combat commands, the antiaircraft elements are usually kept under combat command control. After an attack gets under way antiaircraft artillery will be used to ensure the uninterrupted advance of the assault elements of the division, by protecting vital locations such as bridges and defiles which would be time consuming to detour or repair from air attack. Priorities for antiaircraft artillery defense are given to those elements and installations whose delay or disorganization would hamper the accomplishment of the mission of the division. Such priorities include critical points in the area of advance, assembly areas before an attack, field artillery, command posts, and trains.

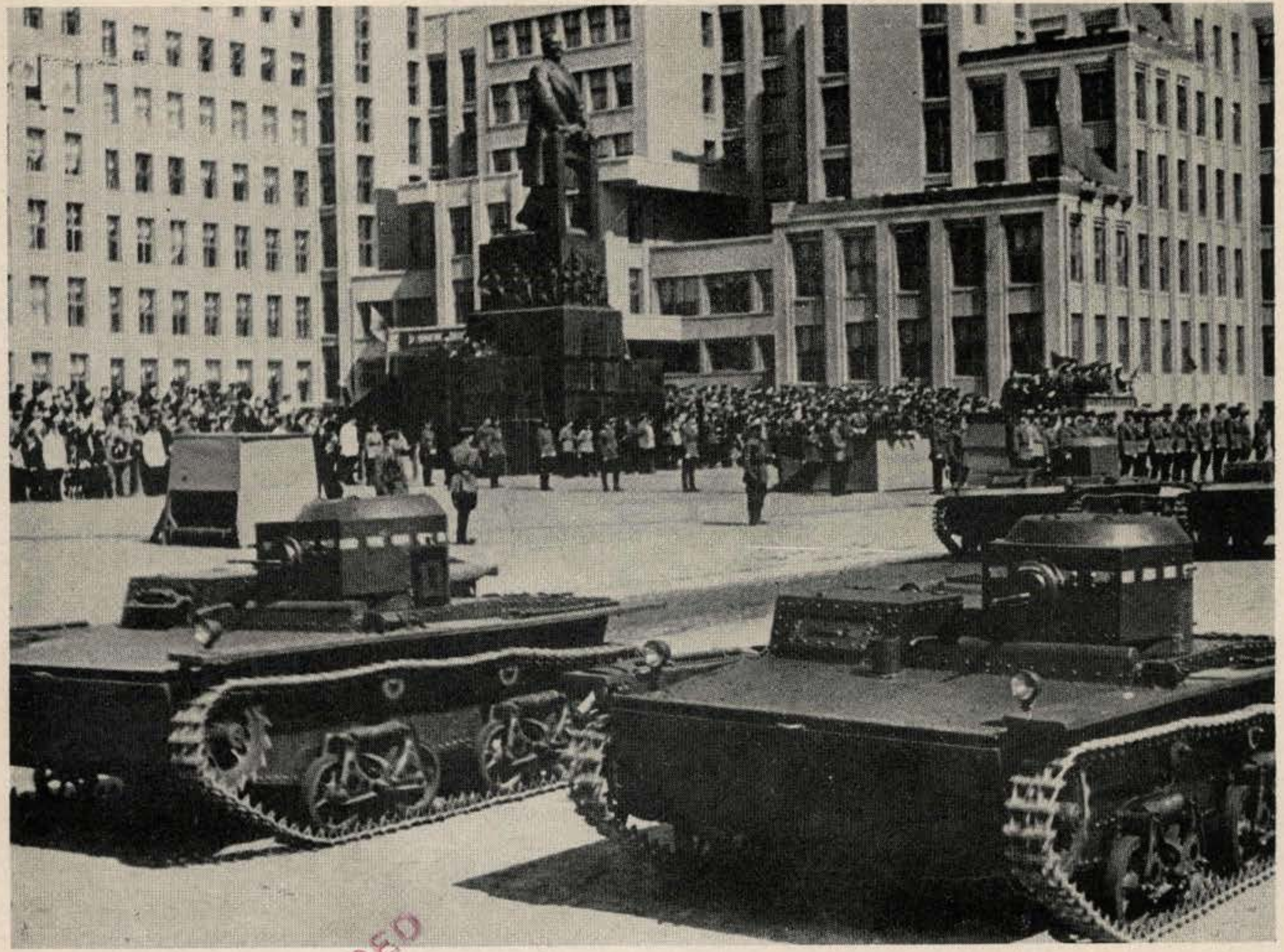
In the defense, the antiaircraft artillery is normally employed under division artillery control with a mission of preventing enemy air reconnaissance and air attacks on defensive positions. The battalion also provides protection against air attack for reserve elements, the field artillery, and other vital division installations.

Armored Artillery—A Fighting Unit

Because of the supporting nature of artillery, many commanders unconsciously relegate to it the position of a nonfighting arm, one that must always be protected by infantry cover and distance from the scene of action and one not expected to take the normal risks of other combat units. This does not hold for armored artillery—it is a fighting arm. Its organization and equipment permit it to accompany the other members of the combined arms team, and its personnel must have the same aggressive spirit for contact with the enemy which characterizes the tanker or the armored infantryman. Armored artillery can be expected to clear its own position areas of enemy resistance and to aid in the close-in defense of the entire team. The time consuming selection and occupation of position by towed artillery is practically nonexistent in the operation of armored artillery in the attack. An armored artillery battery should be able to begin delivery of fire in less than five minutes after receiving a call for support, even though the battery be in column on the road at the time the call is received. At times an armored artillery battalion can be effectively used as a holding force and base of fire, while the entire remainder of the combined arms team maneuvers to a flank. By so doing, the commander of the reinforced battalion may increase his "effective fighting strength" and defeat an enemy superior in numbers.

Of particular importance to the reinforced battalion commander is the part which the artillery battalion commander and his liaison officer should play in the planning of a successful attack or defense. The deliberate planning which characterizes armored action must include the best fire plan possible for the utilization of supporting artillery. The violent execution of the operation must employ the full effect of the tremendous fire power available.

Particular emphasis must be placed upon teaching the commanders of small units what artillery can do for them. They must realize that the forward observer with them carries a big stick and the chance of success in their fight may be greatly increased by their intelligent use of his support.



T-38 Tank in parade of the Workers' Red Army

Sovfoto

CARDED

THE STORY OF SOVIET ARMOR

by GARRETT UNDERHILL

The second in a series of three articles on Soviet Armor. This article covers the "Middle Ages" (the 1930's). The third of the series "War Years" will appear in an early future edition of the Armored Cavalry Journal. The first story "Early Days" was published in the January-February 1949 issue of the Armored Cavalry Journal.

"COMRADES, our army is invincible." This was the assurance Defense Commissar Klementi Voroshilov gave the 18th Communist Party Congress in 1939—the year Hitler unleashed his panzers against Poland. The smartly uniformed Marshal of the Red Army preceded this outburst of confidence with two promises:

"That the enemy will be crushed and destroyed in short order is pledged by the political and moral unity of the Red Army with the entire Soviet people; . . . another pledge is the fact that our Workers' and Peasants' Red Army is a first class army, better than any other army, an army that is technically equipped and splendidly manned. . . ."

The fun-loving marshal and his fellow Reds had apparent reason to be satisfied. A dozen years before, in simpler, more proletarian uniform (no diamond-studded marshal's star existed then), he had stood before an earlier Party Congress; then he had characterized the Red Army as essentially an 18th Century foot and horse force, almost totally lacking in modern armament and equipment. (It then had less than 150 tanks, mostly all of World War I vintage.) He had been alarmed that Russia's industry was hardly more productive than it had been in 1913; in certain categories essential to the production of armor, aircraft, and artillery, in 1927 it was below pre-World War I levels. The limited number of old Czarist small arms, artillery, and other munitions arsenals he had castigated as in "chaos"; he had warned that since World

War I they had actually backslid. The arms they were producing were of a quality inferior to those of Western forces.

In 1927 the situation as regards the state of general Russian education—not to mention technical training—had been so low that many authorities believed it quite impractical to consider matching the West, either as to the creation of a proper industrial and economic base for modern arms, or as to an army trained to man masses of complex, highly mobile weapons like tanks and planes. It was only nine years since Trotsky had cried: "Proletarians, to horse!"

Yet interested persons could make out a good case to prove—at least statistically—that the impossible task had been accomplished. In those twelve years, under the terrific drive of the three Five-Year Plans (the last got under way in 1937), seemingly fantastic progress had been made:

> An ever-expanding economic base for military power had been created; it included basic research, engineering staffs, labor forces; there were basic industries, armaments industries, communications. Commissar Kaganovitch in 1939 assured the Party that the railways, one the Achilles' heel of the Red Army and so necessary to the strategic mobility of armor, were in good shape, and sufficiently expanded.
>
> In the arms considered most important—armor, artillery, and air—the Red Army was believed at home and abroad to be vastly superior numerically to any other world power.
>
> Annual truck production, so vital to the tactical mobility of armor and of the army in general—was up from a total of 505 cars and trucks in 1927, to 181,700 trucks produced in 1937. This total was second only to U.S. output, seven times that of France, nearly triple Germany's.
>
> The size of the Red Army as a whole had been increased 3½ times, with regular forces and their reserves finally completely replacing the once more numerous territorial units.
>
> A well-educated officers corps and high command had been turned out by a multitude of intermediate and higher service schools and colleges; they had replaced the uneducated scratch-trained Civil War veterans who, with grudging aid accepted from masses of old Imperial officers, had led the Army in the 1920s.
>
> Better civilian education, general and premilitary, had been capped by multitudinous technical military schools; they had provided many enlisted specialists who, if hours of study counted, were well qualified to man the new arms.
>
> Military theories had been worked out; strategy and tactics of new arms, and of combined arms, had been studied and debated. Extensive experimental tactical work had been done, and results applied to rank and file by intensive training.

The General Index line in 1927 was that the 1927 goal had been reached; that the Red Army was quantitatively and qualitatively up to the standards of Western forces.

This progress had been made despite attempts within industry and the forces to sabotage the program; as early as 1934 foreign advisory engineers were noticing obstructionist tactics by people who resented the authoritarian trend of the Red Revolution, and who feared for Russia's safety should the peasant base of the Army be alienated by harsh regimentation of the farm. Despite the deaths of millions of peasants who resisted the First Five-Year Plan's collectivization drive, the peasant infantry had been as loyal as the largely proletarian air force and incipient armored force.

The widespread 1937-38 purges cleaned out quite incredible numbers of left- and right-wingers (and then some) in the officers corps, but it did not result in apparent serious demoralization of command. There was surprisingly little consequent relaxation of the strict discipline which the Reds had come to believe necessary for maximum effectiveness of modern shock arms in bold assault. Nor was there a loss of confidence in the officers on the part of the men. The clearing out at the top didn't have the same deleterious effect that it might have had in Western forces. While it destroyed some experienced talent, it also rid the army of many older officers who never had enjoyed the general and military educational facilities available to the juniors who took their places; whose Civil War successes had blinded them to the value and proper employment of new arms.

By the end of August, 1939, the men who had set about to achieve these apparent Soviet miracles had some reason to feel that they had done more than create a military version of a Potemkin village—a sham with an impressive false front, but lacking in solid strength and substance. For in 1938 and 1939 the new arms had had a workout against the pride of militarized Japan—the Manchurian-stationed Kwantung Army. Elite segments of Hirohito's regulars which had openly challenged the Reds were virtually wiped out in by-the-book demonstrations of new Red field service regulations and tactical manuals.

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Prior to the war Mr. Underhill spent four years with *Life* Magazine as a military correspondent. He is again serving *Life* in that capacity, while specializing in his own work.

Bachrach

Garrett Underhill

At Lake Khasan (near Vladivostok), the Japanese 19th Infantry Division occupying Chenkufeng Hill was made the object of an assault against a fortified position by the combined arms of the Far Eastern Red Banner Army. After artillery and bombers had practically blown off the hilltop, two regular Red infantry divisions assaulted around either side of the lake which lay in front. Besides their own integral tanks, the infantry were accompanied by independent armored units—organized in brigades—for a total of some 285 tanks. Fighters bombed and strafed. The operation took a day; the Japs sued for an armistice before the Reds could finish off the second hill, but they had meanwhile done heavy damage to Japanese supporting arms when they had neutralized the 19th Division's rear with artillery and aviation.

At Khalkhin-Gol (Nomanhan) in Outer Mongolia, the Far Eastern Army a year later enacted the encirclement and destruction of a hostile force. The Japanese 6th Army received a textbook treatment involving its being pinned down by frontal assault of infantry accompanied by tanks, while independent "mechanized brigades" (pocket armored divisions) swept around the flanks, with cavalry on the extreme outside. The principal character on the Red side was an unknown named Zhukov.

Though actually only the action of corps against corps (the Japanese used "army" to mean "corps," but the Reds' histories always use "6th Army" because it sounds better), this engagement caused a great stir in Soviet circles. To them, action by well equipped regular ground forces of combined arms had far more significance than the third-rate brawl in Spain, on which the European-oriented West had focused its military attention. The Reds recalled how in 1904-5 the then newly created Japanese Army (backed by brand-new industrialization) had surprised the world by whipsawing the big Imperial armies of the Czar—forces on which the Russians had lavished cash and effort for a century. The West proceeded to aggravate the Reds' inferiority complex by paying scant attention to these very significant Far Eastern exchanges of totalitarian military courtesies.

But by 1939 many Westerners had seconded the Reds' own opinion of the Soviet achievement in building a gigantic modern war machine. As early as 1935 General Guderian (Germany's "Father of Panzers") wrote that the Reds had as many as 10,000 tanks. He considered that they had produced in mass their best and most modern armored and motorized equipment. He thought that the Reds had trained their troops excellently in the handling of such matériel, and had adapted their tactics and operational aims excellently to the performance of these troops. A little later the January 12th, 1936 New York *Journal American* set the keynote for the Hearst press when it trumpeted alarms that the Red Army was the greatest fighting machine in the world. This view was seconded the following December 8th in a banner headline of Lord Beaverbrook's London *Daily Express*.

Soberer elements in the West—who could not be suspected of promoting their own arm, or of otherwise gaining by conjuring up the spectre of the Red bogey—often agreed. Max Werner, the German-trained military writer, in 1939 placed Red tank strength at 20,000. *Die Panzertruppe,* official German armored service journal, published the same year an article giving 4,000 light, 1,000 medium, and 300 heavy tanks as Soviet armored strength. Considering General Guderian's statement that German T/O strength at the start of the 1940 push to the English Channel was 2,200 (including armored cars), it is clear that many in the West thought the growth of Red armored strength as little short of phenomenal for peacetime.

Such statistical crystal-ball games were made the more fascinating during the "Middle Ages" period because it became Soviet official policy to boast of arms progress and preparedness. Whether the Reds were trying to scare off Hitler and gain allies, or whether they were indulging in a bureaucrats' and politicians' round of mutual self-congratulation is a subject for speculation. Nevertheless statements were forthcoming like the Moscow *Pravda* announcement of 1939, which related that in the previous five years the greatest increases in armament had been first in tanks, then in antitank artillery. With a strange disregard for security, *Pravda* blandly assured the Party members that Soviet Russia had from 6,000 to 10,000 tanks.

Armor was not the only branch of service about which the Reds of the day thought out loud in five-figure statistics, and to characterize which they flung about adjectives in the superlative degree. Aviation was another shock arm which had captured the Soviet imagination. As a matter of fact, even prior to the First Five-Year Plan Soviet aviation was organized industrially and tactically on a far larger scale than armor.

The Reds took a practical point of view in recognizing that armor could not fulfill its role—especially in enveloping movements—without air aid, and indeed Soviet aviation and flak was created mainly for the tactical support and protection of ground forces. To give this support, in 1936 the Soviet openly announced a program to triple first-line air strength to 15,000 planes. The Army's chief, Marshal Tukachevski (doomed in the later purge) made a most remarkable statement to the Party in 1936, saying of the Army's aircraft program: "When once we can begin serial (Russian for 'mass') production, as we shall be able to do by 1937 at the latest, there will be no overtaking us."

Similar confidence was expressed concerning airborne troops—an arm which the Reds were the first to develop, and in which they were the first to incorporate armor. (The US, Japanese, and British didn't even start until 1940; the Germans began in 1935.)

Of airborne troops, Voroshilov remarked in the mid-1930s that no country could catch up with the lead gained by the Red Army. He added: "There are no such countries, and I think I shall not be wrong in saying there never will be. . . ."

To a certain degree this confidence in numbers, this sudden conversion (beginning with the First Five-Year Plan) to confidence in the machine, was symptomatic of the revolutionary state of mind of the Soviet leaders and their fanatical Communist followers. Like all revolutionaries, their emotionalism and imagination was easily aroused by novel ideas. In them the Reds would think they had found the secret of success; that by acting upon them they could outclass the old conservatives. So, just as Lenin once thought that the key to socialism was electrification, and as other early Bolshevists hailed the idea that agriculture would be revolutionized by the tractor, so the tank and plane and parachute were spectacularly novel forms of war which captured the imagination of Red political leaders who had become semi-militarized as a result of their Civil War experiences.

These flights of Red fancy have largely been forgotten, but it should be recalled that the Polar Concept—so popular in US military circles in 1945-46—was a common subject in the Red press of the 1930s. In 1935 the famous Red Army pilot (later General) Gromo embarked on his trans-Polar flight project which ended up in Southern California in the summer of 1937—the year in which four four-engined TB-3 heavy bombers landed at the North Pole and picked up Papanin's party.

The daydreams of stratospheric trans-Polar flight that appeared in the civil and military Red press were far more ambitious. They were examples of the kind of thinking that in 1936 led one critic to remark: "Any idea invariably takes monstrously hypertrophied and grotesque forms."

As regards armor, the most grotesque concept was born before the First Five-Year Plan was underway. At this time elements of the Red military believed that tanks were capable of obtaining a decision by deep and massive action, largely independent of other arms. It was a belief which persisted until the mid-1930s. In its most hypertrophied form it was represented by the project of a super-super-super heavy tank, literally a land battleship. The idea was that a very limited number of these giants would be stationed each at a point behind the frontiers. Special roads would radiate from each base, so that upon the approach of a hostile force the tank guarding the threatened sector could sally forth and utterly destroy the invader. This fantasy was projected about the time of the 6-ton T-18 tank, when Red industry was hardly in a position to carry out such a project should it be deemed practical. A German automotive engineer working on the T-18 actually did some work on the project, which never got off paper. No giant tanks were ever built, although reports of 80-ton, 100-ton and larger tanks filtered out of Russia between 1925 and 1942. (V. D. Mendeleyev's 1911 tank on which the Soviets base their claim to a Russian's having invented the tank, was a 189 tonner; this engineer, son of the famous chemist now rejected by the Soviets, is supposed to have worked out his project "to its finest details.")

The wild idea of the land battleship had in it all the important factors influencing Soviet military thought at the start of the "Middle Ages" period of armor. There was a hint of the ancient Russian regard for the firepower of artillery—their "God of War"; there was traditional Russian appreciation of shock action—combined with Civil War-instilled belief in the importance of extreme mobility, and the new fad favoring the machine.

Though they couldn't have been worse prepared in matériel, command, and training, at this time the Reds dreamed of the blitz—the possibility of which they were later to deny. They conceived of the rapid conquest of nations with big industrial bases. They hoped to break through cordons of opposing armies by a series of terrific massive blows, swiftly delivered by masses of tanks and armored cars, aided by planes, with cavalry to help in envelopment and pursuit. Armor and motorized forces were looked on as a fine means of penetrating to the interior of a hostile nation, so as to provide its revolutionary proletariat with support sufficient to enable it to throw off its capitalist chains.

This trend of thought was headed in exactly the opposite direction from any concept seeking to exploit the natural genius and fighting qualities of the Russian in defense; it failed to take advantage of Russian space, the peculiarities of terrain and climate. It took a while for the old Czarist military academicians to rein in the mentally frisky new Red military, give them a sounder military education and perspective in the expanding service schools and staff colleges—and to bring them back to the realities of Russia, to a better understanding of Russia's human and material assets and defects.

By 1936, a soberer view of armor was taken. Paragraph 112 of the Field Service Regulations issue that year specified:

> "Modern assault weapons, especially tanks, aviation, and mechanized forces (true armored units), employed on a large scale, make possible the organization of a simultaneous attack on an enemy along his entire battlefront, so that he may be isolated, completely surrounded, and destroyed."

Although theory and armament are often in an enigmatic precedence relationship like that of the egg and the chicken, it is obvious from history that the best armament is that which is built to fulfill specific military concepts. It is a matter of record that weapons are best which, lacking war trials, have their tactical utility and application well established in sizable field exercises. But in their impatience to get cracking on armor, the Red leaders didn't await the results of thorough field and factory experimentation. They didn't build service test lots of various types of tanks and give them prolonged field trials. As soon as the First Five-Year Plan provided a sufficient industrial base, a full set of various types of tanks were put into intensive production.

It is true that in 1928-29 there were some experimental tank and armored car units. All these had to work with were the handful of available T-18s, what would run of the 15 Russki Renos, and what was left of the 80 to 100 British Mark V heavies, Whippets, and French Renaults captured in the Civil War. There were also some two score British Mark I mediums—a tank considered an unsatisfactory armored force vehicle by the British.

This type of heterogeneous force resembled the scratch mechanized Force the British assembled on Salisbury Plain in the summer of 1927; which comprised 48 new mediums, two companies of tankettes, and two of armored cars. It was the same sort of outfit, though larger, as the US 1928 Fort Meade Experimental Mechanized Force, which also had a few British-type heavies and a handful of Renaults—all of World War I origin. But unlike the British, who were kept from creating the brigades found necessary because of lack of money (further British experiments in 1928, 1931-32, and 1934 had to be on a similar scale), the Red tankers had the backing and unlimited financial and industrial support of the Soviet Union—and of the iron hand of Joseph Stalin himself. Unlike the US Army, whose 1930 Fort Eustis test of 30 tanks and 10 armored cars came to nothing because only $284,999 was available in 1931 for the mechanization of all arms, the Reds weren't troubled by the Great Depression which began in 1929. It gave them a fine chance to get a long lead on the French, British, and Americans. It gave them a chance to buy the best US and British engineering talent to aid their First Five-Year Plan, for the big firms were then not averse to taking Moscow gold in return for helping what the Reds proclaimed to be the build-up of their war potential.

The Reds thoroughly studied foreign mechanized trials. Right up to the German attack in 1941 they avidly followed foreign discussions of armor, reading carefully the published works of Britain's General Fuller, Germany's Guderian, and Austria's Eimansberger. They devoured foreign service journals; their own became important forums for discussion and dissemination of tactical, technical, and training material. The Reds do not mention General de Gaulle's Armée Choc as having been as inspirational to them as it was to Guderian; but by the middle 1930s General Martel—father of Britain's Armored Corps—found his book *In The Wake Of The Tank* translated and widely circulated by the Red Army. (Russian use of the word "mechanized" to denote combined arms based on armor follows British practice; "motorized" is used for truck-borne outfits, while in this era "tank" is used to designate units consisting almost entirely of tanks.)

On the basis of their study and of their own work the Reds got out in 1931 their first combat regulations for armor. Unlike the French, British, and Americans they at once recognized that independent armored units comprising all arms could amount to more than a modern counterpart of light cavalry; it was seen that such units could have decisive effect if used in proper combination with other arms.

In 1932, two years before Germany formed her first armored divisions, the Soviets assert that they formed their first "moto-mechanized corps." This "corps" was up to and throughout World War II the Soviet equivalent of an armored division. (Similarly, their "mechanized brigades" have been of regimental size.) In 1932 the Russians also formed a senior school for armor—the Stalin Military Academy of Motorization and Mechanization, Stalin himself signalizing the opening with a statement emphasizing the importance of the school and arm.

While the Reds deserve credit for being the first military force officially to hail the wisdom of the armor prophets who were without honor in their own countries, and to recognize armor, air, and motorization as essential in modern armies (other forces didn't even voice such aims as pious hopes till well after 1927), it would seem that their potential advantage was somewhat compromised by unnecessarily hasty action.

There was no pressing need in 1927-32 to jam new tanks into production. So far as strategy is concerned, at this time Hitler was not yet in power; the Red Army and the Reichswehr were still working warily together at their joint Kazan tank school. Voroshilov has confessed that up to 1927 nobody in Russia had thought of preparing the Soviet Union for a war of "actual significance." In 1927, the best threat the Reds could frighten themselves with was the "menacing attitude" of utterly defenseless Britain.

The sudden about-face from the happy-go-lucky Frunze days—the almost frantic creation of immense armored and air forces, was clearly more a spectacular political gesture than a well-considered military move. But like many Red politically inspired actions before and since, it had its sound military aspect, too; in view of Russia's industrial backwardness, it was a sin not to have lit a fire under industry before 1928.

Believing that the British and Americans had had more automotive experience than the French and Germans—and that Vickers had shown itself foremost in tank work, the Russians went to England for designs that would work. From America they obtained ideas and tools for modern mass production plants. In this 1931-39 period of reliance on foreign tank know-how, the Soviets built 32 tank models, of which the 10 put into production were all based on foreign designs.

The Russians themselves had not been neglecting the development of home-grown designs. Prior to the decision to turn to more soundly engineered foreign chassis, in 1929-31 the Russian engineers had driven themselves almost mad by experimenting with no less than 8 tank models. In their efforts to replace the Russki Reno of 1920, the 6-ton T-18 (MS-1) of 1927, and the 20.3-ton T-24 (only made in very small numbers), they worked on the tankettes T-17 (1929) and T-23 (1930); the light tanks T-19 and T-20 (1929); and the mediums Direnkova (1930) and Grotte (1931).

Active as they had been, the Soviet engineers just didn't have the industrial and automotive know-how to design satisfactory chassis and engines, and particularly transmissions and engines They had a terrible time with teething troubles, or "childhood diseases" as Russian engineers put it. An additional handicap was the fact that before 1930 there was no native Russian tank armament industry; guns were imported or "trophies," 37-mm French Hotchkiss cannon and 8-mm Hotchkiss machine guns being favored

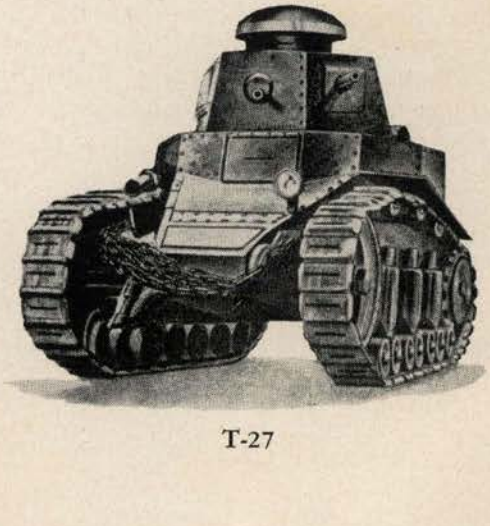
It might be maintained that Soviet authorities were not a little impatient with their engineers, and that foreign engineers also had trouble perfecting tanks. Certainly the US Army had no little difficulty with their 1918-19 American-built Renaults right up to the time they went out of service. When Mr. John Carden submitted his tankette in 1927, General Martel at once noted that though Carden was obviously a genius and an engineer of considerable experience, his prototype had many mechanical defects. Not until a year later did Carden—later knighted—bring out his very satisfactory Mark VI version to replace his bug-infested Mark IV. But Martel also noticed that the tankette Morris Motors (Britain's native-grown equivalent of Ford) submitted in 1927 in short order proved to be a reliable vehicle. The fact is that the general performance of these Soviet home-grown tanks, as well as their teething troubles, made timely perfection seemingly hopeless.

Re-evaluation of the Soviet figure of ten tanks produced in 1931-39 reduces it to six. The BT series was based on the same tank; the T-38 was an improvement on the T-37. All basic models were undertaken in the first two years—the T-27 tankette, the T-26 and BT-2 light tanks in 1931, the T-37 amphibian in 1932, and the T-28 medium and T-35 heavy in 1933.

In contrast was contemporary German rearmament for war. The Germans, despite their far larger industrial base (which the Reds in 1939 didn't by any means believe they had overtaken), were more cautious. They selected for manufacture only four tank models up to 1939, the *Pz.Kw. I* (built in fairly large numbers) being followed in 1933 by the *Pz.Kw. II* (comparable to the T-26), with the *Pz.Kw. III* and *IV* mediums coming into production in 1937. The Germans acknowledged the utility of a heavy breakthrough tank and made experimental models, but not until 1941 did they feel ready to undertake a production project. Their whole Army armament production program of the 1930s was far more modest than the Reds', interest being focused on training.

T-26 Carl Mydans—Life

It was to Martel (who in 1925 helped pioneer the idea of the British tankette) and Carden—through the Vickers firm—that the Russians turned for their first new production design of the 1931-39 period. This vehicle was actually a corruption of the original Martel idea of small, cheap little tanks, hosts of which were to be built to overwhelm antitank defenses while directly supporting assaulting infantry. The British Army turned the idea into a machine gun carrier. In the 3-ton Russian edition—the T-27—the Reds were able to fit a tank machine gun which more closely



T-27

fulfilled Martel's concept of a light dismountable gun than did the heavy British watercooled Vickers-Maxim. The tank adaptation of Degtyarev's 1927 "DP" infantry cal. .30 light machine gun can quickly be fitted with a bipod and front sight; it is equipped with a telescoping skeleton stock and 60-round drum. (When a Soviet tanker is overheard saying that he has the DT's, he is merely referring to these guns—"D" for V.A. Degtyarev, "T" for tank. The DT derives from the DP via the very similar—now abandoned—DA aircraft machine gun.)

The specimen tankettes the Reds acquired in 1929 were actually Vickers Carden-Lloyd Mark VI's; as such they enjoyed the engineering experience of two talented men, Carden and Lloyd, as well as of Vickers production experience, and its automotive knowledge stemming from its famous Armstrong-Siddeley auto and aircraft engines. The Russian versions were 9½ feet long, and had but .24-.35 in. armor; they could make 28 m.p.h.

The Russians had no reason to be ashamed of their adoption of the Carden-Lloyd design. Vickers also sold a license to build these tankettes to Italy's famous Fiat auto plant, from which came the many little M1933 Italian two-man tankettes used right up through 1942. It was this type of tankette which was roughed up by Russian T-26 light tanks during the Fiats' notorious demonstration of their (and the Fascist Militia's) military qualities at the Battle of Guadalajara north of Madrid, in 1937. Another famous European automotive firm—France's Renault—also bought rights to the Carden-Lloyd tankette; from it Renault developed the 1934 AMR light tank of the French mechanized cavalry, and the little "chenillette" unarmored prime mover in wide use in 1940. Poland made these tankettes on license, and from it the Japanese developed their Type 32 (1932), Type 34, and Type 37 two-man tanks which they used against China and in World War II. The British ended up with the famous open-topped Bren Gun Carrier of the late unpleasantness.

In accepting the tankette the Reds were not being slavish imitators. As so frequently happens in original thought and research, conditions cause the same idea to crop up in more than one place at the same time. So it was that the Russians, quite unknown to General Martel, had been fond of the idea of the one-man tank for some time before 1920. Besides Mr. P.'s little amphibious bug in 1915, in 1918-19 there had been a project by an engineer named Maximonov for a one-man, one machine gun tankette of 7 tons, armored with .35-in. plates, and making 7½ m.p.h. with a 40 h.p. Fiat motor made by the Moscow AMO plant. The reason for adopting the Carden-Lloyd was industrial; it wasn't evidence of lack of originality of military thought.

The T-27s very quickly passed out of the Soviet armor picture. Unlike the Germans, who at this time pinned their faith on masses of 6-ton light tanks armed with rifle-caliber machine guns (these *Pz.Kw. I's* were still the most numerous tank type in the 1939 and 1940 Polish and French blitzes), the Reds by 1934 were building their main strength on the 10-ton T-26 and the 13.4-ton BT-5 light tanks, both of which by then were being armed with a 45-mm long gun and a coaxial rifle-caliber DT. The common British Carden-Lloyd Mark VI light tank was of weight comparable to the German *Pz.Kw. I*, as was the little French AMR. The Reds didn't exactly throw the T-27s away; some use was still being made of them during the siege of Leningrad in 1941-42.

The most important aspect of this T-27 *tanketka* was that with it the Soviets accepted a principle voiced by General Martel around 1925. Martel's idea was that such tanks should have components which were in common commercial use. Since the new Molotov Plant at Gorki was to build Model A Fords, Model A engines and other Ford A components, they were incorporated in the Soviet tankette. Because in 1931 the GAZ factory wasn't ready to build the parts, they had at first to be supplied from abroad, from Cologne Ford in Germany.

When the T-27 passed out of the armor picture, the tank which succeeded it in utilization of the automotive industry base was the 3.86-ton amphibian (*plavaiushchii*) tank T-37. This little two-man vehicle derived from the 1931 Vickers Carden-Lloyd amphibian, in which European armies were generally disinterested. Lightly armored to facilitate flotation, it had but .35-in. armor on the front, with about .16-in. elsewhere. A two-blade propeller gave it a water speed of 2½ m.p.h.; its land speed was 22.3 m. p. h. Its introduction does not appear to have started a jurisdictional dispute with the Red Navy concerning possible Army invasion of its realm.

This amphibian was widely used in reconnaissance units of infantry, cavalry, and mechanized outfits up through the Finnish War of 1939-40. Till then it might also be mixed in with the T-26 light tank in accompanying tank battalions assigned to infantry divisions, there being 16 T-37s to 22 T-26s in a typical battalion. (The US assigned a company of light tanks to its infantry division T/Os during this period.) The main mission of the amphibians was combat reconnaissance; recon in fluid situations was the job of armored cars.

The T-38 of 1935 was a slab-sided improvement designed so as to be easier to turn out. It had a high speed (28 m.p.h.) despite less weight and the same armor thickness. The turret with single DT was moved from the left side to the right—an action perhaps symbolic of the growing conservatism of Red Army men.

On the T-37 and -38 the Reds used a scissors suspension simpler than the Vickers edition the British

Army found so attractive. The Soviets tell us utilization of the automotive industry as a light tank base continued up to and during World War II, with Gorki keeping its place as the center.

The main infantry-accompanying light tank right up through the first summer of 1941 was the T-26. This *legkii tank* was also used to equip mechanized brigades and moto-mechanized corps, although the BT series would appear more suited to the role. Industrially, the T-26 lay between the more military BTs and the commercialized amphibians and tankettes. It relied on the tractor industry in theory, although until the mid-1930s this industry was still largely occupied with wheeled rather than tracked tractors. It was a heavier version of the Vickers 6-ton (US 6.7 tons).

The original T-26 prototypes bought from Vickers (and as at first made in Russia), had two turrets side by side. (This arrangement was favored by the US Infantry light tanks of the latter 1930s.) Following the idea carried out in the first Soviet tank, some tanks had turrets each with a DT, others had a short 37-mm Hotchkiss gun in their right hand turret. A few had but one turret, armed either with a long 20-mm machine gun or a flame thrower and a DT—a type used in Finland. With the advent in 1932 of the Russian 45-mm gun, these early T-26s were succeeded by swarms of the single-turreted type which fought in Spain, the Far East, Finland, in the occupation of Poland, and against Germany. In the latter part of the 1930s, Russia sent some T-26s to Turkey as protection against the Germans; in 1938 others were sent to back Chiang Kai-shek in his fight against the Japs.

The Russian 3-man T-26s with 45-mm gun ran to thin .59-in. plates all over. With a 1937 weight of about 10½ tons and a speed of 18½ m.p.h. with four-cylinder gasoline engine, the T-26 compared unfavorably to the contemporaneous US 1935 9.7-ton M1 Cavalry "Combat Car." Its armor wasn't as thick; it was slower, and far less maneuverable and reliable. Its tracks couldn't compare with the US rubber blocks.

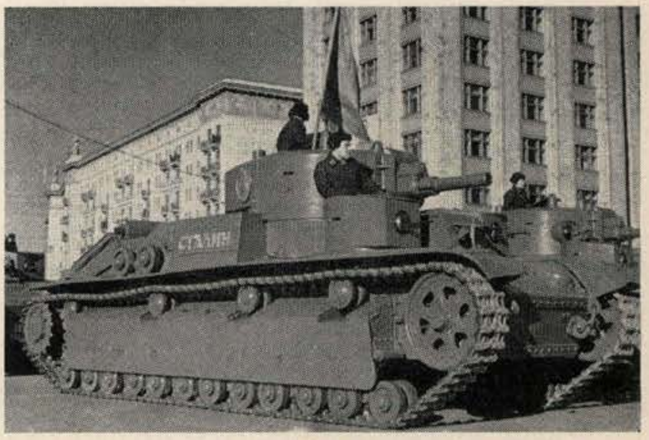
The BT series was based on two samples and plans of the Christie tank which the Reds secured from the US in 1931. The two samples were built after Christie had completed an order of 8 for the US Army.

The BT series (*Bistrokhodnii Tank*—fast tank) was intended for use more or less as the US and British employed mechanized cavalry. Its high speed was useful in enveloping operations. It was a proper armored force tank, with the same armament as the T-26 but thicker (.87-in.) frontal armor. The Russians thought the BT could also be used in assault with infantry. When so acting, it was supposed originally to penetrate rapidly to the core of hostile defenses, attacking artillery and headquarters areas.

The series started off with the BT-2 in 1931. A fairly rare type identified by a turret front which sloped like the forehead of a Neanderthal man, it mounted the Russian 37-mm M1930 tank version of the Red antitank gun of the same size—the same gun as the German Army's Rheinmetall 3.7 cm Pak. The tank version of the Army's beefed-up 45-mm M1932 edition of the Rheinmetall was followed by a proper M1934 45-mm tank gun, widely used by the many BT-5 tanks which made their spectacularly fast runs for the Red newsreels, and across Red Square during May Day and October Revolution parades. Following the appearance of the BT-5s in 1934, in 1937 there came into service the BT-7 with sloping sided turret. The BT-8, with Diesel V-12 engine and a 76-mm gun, appeared briefly and in small numbers in 1938-39. It was soon radically metamorphosed into the famous, successful, and still current T-34 medium.

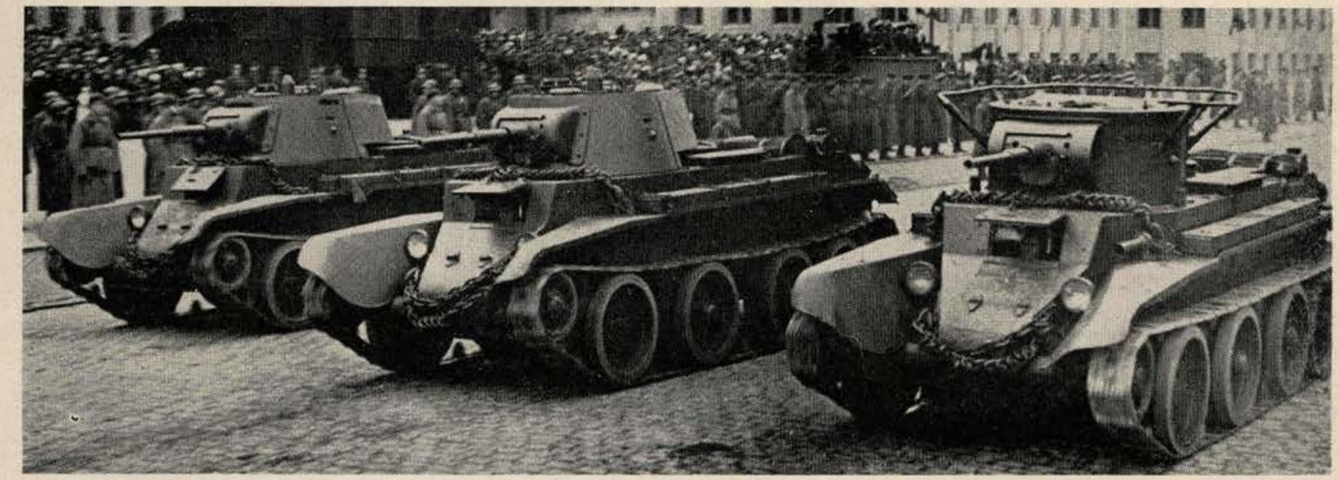
The BTs saw service in Spain, at Khalin-Gol, in the occupation of Poland, and against Finland. When the Germans invaded Russia in 1941, BT's and T-26s comprised about 75% of Red Army tank strength.

The Reds considered that the BTs had exceptional speed, and were good in cross-country going. Red characteristics gave the BTs a top speed with tracks of 33½ m.p.h., and (with tracks removed) a road speed of 46½ m.p.h. on its big hard-rubber tired bogies. The Reds seem never to have bothered with the track removal process, said to take 30 minutes. Americans who drove BT-5 tanks in Spain complained that the tracks had a tendency to remove themselves, especially if turns were at all abrupt and not handled smoothly. Wheel instead of lever steering was used. With a crew of three, the BTs varied from a low weight of 11¼ tons to a final weight of 15 tons for the BT-7.



T-28 Sovfoto

US development of the Christie halted before the Reds got going. The US Infantry wanted a light tank, and their idea of the upper limit of light weight was short of the Red. Ordnance believed that the Christie had many mechanical flaws; it wanted to perfect light tanks with our now famous volute spring suspension. The British were captivated by the Christies, and in the latter 1930s began work on their "cruiser" tank



Left—BT-5, *Right*—BT-7.

Sovfoto

series which armed their converted cavalry. In many respects the early cruisers were comparable to the BTs although far more de luxe four-man tanks. However, only a handful were available in the early years of the war.

In 1933 the Reds produced the medium (*srednii*) tank T-28. With a short central turret with 76-mm gun flanked in front by two small machine-gun turrets, it was conceded by the Reds to have been inspired by the similarly laid-out experimental Vickers 16-tonner (18 US tons). The 30.8-ton T-28 had an armored suspension and was fast for its time—24.8 m.p.h. It was employed in tank brigades to be assigned to assaulting infantry. The Reds also intended it to give fire support from covered positions as ersatz for artillery; or else it could act ahead of infantry in breaking into enemy positions to destroy artillery. (In the 1930s the Reds generally considered suppression of antitank fire the mission of artillery.)

A few T-28s served in Spain, where they attracted some favorable notice. Foreign observers of that conflict were most impressed with the 45-mm guns of the T-26s. Five years after it was produced its weight and firepower contrasted sharply with the 1938 US 18-ton Infantry medium, armed with a 37-mm gun.

In the big T-28 with its six-man crew and short 76-mm gun, the Reds displayed an appreciation of firepower and large-sized tanks, hinted at in their early adoption of the 45-mm gun and the BTs—which were more like mediums than lights in those days. When starting their 1931-39 tank series, the Reds had figured out that the French tanks built and under discussion were well-gunned and had respectable armor. (In the latter part of the 1930s, the French mediums ran from 22½ to 35 tons, with a 47-mm Hotchkiss plus—in the case of the Char B, which looked like a US 1941 M3 Medium—a 75 in the front of the hull; their armor protection far outclassed the Germans' and Reds', the Char B running to 2.76-in. on front and sides. The British tanks the Reds thought speedy, but thinly armored and poorly gunned. The American tanks they classed with the British; the Reds thought US armament even weaker than the British.

The Reds' notion of how to resolve the balance of speed, guns, and armor in their new tanks was typically Soviet Russian. The order was to be tops in all three essentials. The Red political factions behind the Five-Year Plans were used to ordering the impossible and getting it—or a reasonable facsimile. But the order proved easier to give than to execute. Not till later in the Soviet era could such a directive be fulfilled.

Present protestations of early Red desire for equal emphasis on speed, guns, and armor may well be hindsight. The evidence is plain that what interested them most was speed, then guns—as represented by bigger and higher-velocity cannon. Armor came out third even on the heavy T-35 breakthrough tank, this 49-ton monster had armor no thicker than the 14.3-ton French D-1 accompanying tank of the early 1930s.

Up to 1938 most Soviet tanks had armor not more than .8 in. thick. The T-26s and BTs were theoretically only a little better off for protection than the smaller, lighter British Carden-Lloyd Mark VI light tanks still used when Wavell defeated Graziani in Egypt in 1941. The tin-plate amphibian tanks were worse off than the British Bren Gun Carriers. The rated armor thickness of the T-26s was exactly that of the German *Pz.Kpw. IIs* before they were strengthened.

The Soviet authorities make it clear that the Red Army didn't become conscious of lack of armor protection until the Finnish War of 1939-40. The Spanish Civil War, which proved to many that light tanks had too light armor to face antitank, and caused the loyalists to thicken the armor on the T-26s they built, seems to have been regarded by the Reds as inconclusive; tanks were not available for use in the necessary mass, nor were troops trained in the proper employment of armor. (The chief effect of the Spanish proving ground on Red arms seems to have been the revelation of the need for semi-automatic breechblocks on the 45-mm tank and antitank guns, to speed up their rate of fire.) The fact that the Japanese were not a first-rate tank or antitank army seems to have been overlooked in assessment of the 1938-39 Asiatic brushes.

According to the Russians, it was the power of the field artillery in the Mannerheim Line which caused them to sit up and take notice of armor. It was the Finns' 37-mm Bofors that convinced the Reds that their light tanks couldn't stand up to standard antitank.

The Reds say that the changes in armor protection brought about by the Finnish War were "abrupt and drastic." Mr. Stalin himself was aroused. As a result the repeated request for a miracle of design—a combination of the best in speed and guns and armor—was fulfilled, and quick—to produce a third series of Soviet tanks.

Impressed with the effect of the T-28's 76-mm armament on Mannerheim Line fortifications of all types, the Reds added armor to its front and sides to make it more suitable for attack on fortified positions. Front and turret armor was increased to over 2 inches, sides to almost two inches, thereby increasing the weight to 34 tons. Its armor had already been improved in production versions from .8-in. to 1.2 in. in front and .8 on sides—in an arrangement similar to the original German production *Pz.Kw. IVs.*

The real protective quality of Red armor plate during the 1930s was not to be gauged by figures of thickness. While the rolled plate was generally of far more uniform thickness than later cast armor, actual measurement was somewhat inconclusive, since variations were permitted above (but not below) the specified thickness. More serious evidence of industrial unpreparedness for an extensive armor program was the fact that up through 1936 at least Russian armor was "soft." Robert Gladnick, a Bronx boy who drove BT-5s in Spain, has made the remarkable statement that at the Battle of Teruel in 1937 he found Soviet "soft" armor more advantageous than that shielding the little Krupp *Pz.Kw. I* tanks of the Kondov Legion's Panzergruppe Drohne. He said antitank projectiles would pass right through a BT and out the other side, leaving clean, small holes. There was no interior flaking to wound the crew, nor was the plate shattered so as to leave areas vulnerable to small-arms fire—objections which were voiced about Krupp armor. Hence, if an antitank projectile hit no vital human or mechanical part in its passage through the BT or T-26, the tank got along just fine.

Mr. Gladnick's statement about armor quality is confirmed by other observers; what makes it most significant is that he had picked up the idea from a Russian instructor, and was in 1938 using it as a serious argument in favor of Russian armor as opposed to German.

Of course, the Red Army appears to have dumped on the Spanish Loyalist government some of the worst of the matériel it received in the early days of frantic rearmament under the First Five-Year Plan. Nevertheless, the inferiority of the armor and other weapons the Red Army fobbed off on its Spanish colleagues is evidence of the effect on military potentials of hasty industrial effort with emphasis on quantity rather than quality. There might have been some excuse for Soviet industry's failing to make the grade on new-type weapons like tanks; the Spaniards thought there was no justification for the bad steel and poor workmanship on so-called "star gauge" M1891/30 Mossin rifles made in 1936 by the ancient Tula Armory.

Later, during the Finnish War, late model T-26s and BT's revealed that they had brittle plates which shattered and flaked like the Krupp tanks in Spain. By then the Soviets had shifted from riveted to welded armor. Beginning in 1937 the 45-mm gun turrets with their vertical sides were replaced on new tanks by a similar turret with sloping, rounded sides, and a more conical appearance.

Speed was the preoccupation of Russian armored theorists in the 1930's. They started out with what they thought were fast tanks and kept trying to increase their speed. The Reds also strove to improve tank handling and maneuverability. Efforts were made to increase the operating radius of armored force tanks to 124 miles, so as to permit long-range operations in mobile warfare. (Exterior fuel tanks were not then fitted.) By 1936, the Reds were convinced that satisfactory range could not be obtained without installation of Diesels.

The drive for speed was fulfilled largely through improvement of engines. In this era the aircraft industry continued the work on tank development begun with the T-24's 250 h.p. motor. Its contribution was the powerful M-17 V-12 liquid-cooled motor which soon succeeded the US World War I-type aircraft Liberty as used by Christie. [The "M" designation refers to "Motor" plus serial. A. A. Mikulin, the aircraft engine designer who had worked with Captain Lebedenko in 1915 to produce the latter's strange, Martian-like 44-ton "tank," is not identified as having been associated with this power plant.]

The idea of using an aircraft engine to get a powerful tank motor is an obvious one often occurring to tank designers. But with the 500 h.p. M-17 and the BT tank, the Red Army set the pace for a high horsepower-weight ratio. The BT's 500 h.p. contrasted with the German wartime 26-ton *Pz.Kw IV's* 295 h.p. The M-17-powered T-28 also outclassed the German IV's in power weight ratio, despite the fact that the Germans started years later. (In Lebedenko's tank, Mikulin used two 250-h.p. aircraft engines, one on each wheel, to obtain a total of 500 h.p.)

When they took the engine bone in their teeth at an early date, the Reds made sure not to start with an old engine. Lacking automotive experience, they still had to borrow. Relations with Germany being good, the Reds were able to acquire the license to build the

Munich Bayerischen Motorenwerk's BMW 6-plane engine. This fine 600-h.p. motor was a well-developed power plant used in many of the military planes which the German Reichswehr had built in secret violation of the Versailles Treaty during 1928-35. No German castoff, it powered the German Heinkel He 51 and Arado Ar 68 first-line fighters when the Luftwaffe was unveiled in 1935.

In adapting the M-17 aircraft engine to tank use the Reds encountered some difficulty (it required tremendous radiators), but with it they achieved a remarkable degree of air-armor standardization. Besides being fitted to the BT, T-28 and T-35 tanks, the M-17 powered such 1932 planes as Toupolev's TB-3 twin engine bomber, the Red Navy's MR-5 flying boats, and the Army R-5 and -6 biplane light bombers. In 1934 it was installed in Toupolev's four engined giant TB-3 heavy bombers—the ones foreigners supposed had the mission of roaring from Vladivostok to Tokyo.

Luckily for Red tankers, in the topsy-turvy land that is Soviet Russia the aviation industry had gotten a good head start on the automotive industry. It did not, like the latter, have to start practically from scratch with the First Five-Year Plan. But neither did the Russians have an easy time with aircraft engines; as late as 1944 Soviet official publications were worshipping mass production of aircraft engines as the ultimate in industrial achievement; they admittedly stood in awe of Curtiss-Wright and Pratt & Whitney.

On the whole, the Red tankers' drive for speed accomplished little. The BT with its top of 34 m.p.h. was actually less of a "fast" tank than the better-armored, faster, more maneuverable US lights of 1935 and after. And the US lights had half the power. The heavier German *Pz.Kw. III* of 1937 could do as well. The IIs of 1933 were at first faster than the T-26s, and the Is had an edge on the contemporaneous T-37s.

There is little doubt that in this 1931-39 series of tanks, the Red Army was getting low military efficiency per ton and per horsepower. Guns, not design, speed, or armor, distinguished the Soviet tanks. Indeed, it would appear that widespread use of the 45-mm long gun in light tanks was the only outstanding Soviet contribution. The waste of space and size and power was worst in the T-28, which for an extra 8 tons and vast bulk got only 2 or 3 m.p.h. over the German IVs —gun and armor being roughly similar.

No wonder Soviet designers had thought they could do better. In borrowing foreign designs in 1930-32, after the Western powers had sunk to the bottom of a 12-year disarmament slump aggravated by the depression, the higher Red authorities couldn't well have made a worse mistake. They may have got chassis and engines that would function, but at a cost in over-all military design. When rearmament ended and French, British—and even stony-broke American—tankers got cracking beginning around 1934-35, they rapidly put into deep shade the basic British-American developments the Reds had put into intensive production. The Russians certainly improved on the military characteristics of British-American tanks of the 1920s, but initiation of manufacture of such vehicles in the early 1930s was no way to prepare for a war late in the 1930s. With a nation as industrially backward as the Soviet Union then was, production change-overs to new models were far greater undertakings than in the West. Of necessity the Reds were stuck for some time with whatever models they earmarked for mass manufacture.

"The only consolation for the Reds was that the Germans had made a worse boner in originally counting on the 6-ton I's, at first backed only by the too lightly armed (20-mm gun) and armored 11-ton II's.

It is more than possible that the degree of standardization achieved by the Reds in the 1931-39 period was far from desirable militarily; such ruthless standardization seems to have been made necessary by special Soviet circumstances and especially by the ever-rising production quotas, not only at the outset of the decade, but as the Hitlerian threat developed toward the end of the period.

Certainly there was a remarkable degree of standardization and interchangeability of components. The 45-mm gun turret was used on the T-26 and BT light tanks, on the BA-10 armored car, and on the T-35 heavy tank. The 45-mm tank guns were very close approximations of the Army antitank pieces and of the Navy dual-purpose 45/46. (Peculiarly, it was noted in 1939-40 that some T-35 heavy tanks had one new and one old-type 45-mm gun turret, while the main 76-mm gun turret might be either of the new or old version—practices hardly in conformity with standardization for easy field maintenance.)

U. S. Army

T-35

The history of the BT and T-26 series is evidence that the military didn't care for the degree of simplicity and of production engineering which characterized the first part of the 1931-39 period. With the early tanks of this period there had been a complete about-face from the design policy followed in the Russki

Reno and T-18 of the 1920s. Then the Russians favored Renault practice of a ballistically desirable arrangement of plates that made turrets and hulls practically impossible to mass produce.

In the new era simplicity and ruggedness became the order of the day. The prototype of the T-26 may have been a cheap tank which Vickers had been able to sell during the depression to Siam, Poland, Finland, and other nations (it was used in the Chaco in South America); still the Russians felt compelled to simplify even further their 1934 version. This was done at the expense of ballistic efficiency of the armor, for of the two Red light tanks only the frontal hull armor of the BT was shaped to make the work of armor piercing projectiles at all difficult.

With the 1937 45-mm turrets there was a return to better ballistic design; similar slope-sided turrets appeared on the T-28 medium and T-35 heavy tanks. Minor turret improvements began to be made, adding to production complexities. Spring-loaded hatches for tank commanders, and specially sealed ones for gunners, made their appearance on the later T-26s and BT-7s. They replaced the clumsy rectangular sheets used on earlier models. At this time a rather complicated antiaircraft mount was installed on the turret roofs of the light, medium, and heavy tanks; it had fancy forward-area sights and more gadgets than the effectiveness of a caliber .30 flak could ever hope to justify. On it was supposed to be placed an extra DT machine gun, another antipersonnel mount for which was also fitted in the rear plate of BT and T-26 turrets.

As the 1930s progressed, there were more and more indications that Red Army tankers and designers of the tank engineering service were competent to turn out some very sound, powerful, and effective military vehicles—if they had not been haunted by ever-present politically created incubus of constant quantitative expansion; if they had not been foiled in translations of plans to metal by a constant leavening of skilled industrial staffs by new, undertrained technical rookies.

The return of sanity to the Red Army is suggested by its neglect of the heavy T-35 tank. This 49-ton giant was a bigger and better edition of the 1925-26 British "Independent" tanks—tanks designed to operate ahead of infantry in the assault of a fortified position. The British built two just to get the hang of the type as insurance against production in war; the Russians built a limited number.

While the British versions had a 3-pounder (47-mm) gun in a central turret with two machine gun turrets in front, and two in rear, the Russian edition of this rolling robber baron's castle had the T-28's 76 in the main turret; each pair of subsidiary turrets included one 45-mm gun turret and one DT machine-gun turret, as used on the T-28. With a possible total of 8 DT machine guns, a 76, and two 45's, and a ten-man crew, the T-35 was still not as big as the two monster 72- to 81½-ton French "C" tanks built too late for World War I—but it was big enough. Though the T-35 could make 18.6 m.p.h., its armor ran to no more than 1.18 in; at that it was better protected theoretically than the British Independents.

Armament was fitted in the rear in these Russian, British, and French tanks because they were intended to work right through enemy defenses, outrunning protection of other arms.

It is perhaps significant that the Russians are not on record as having used the monstrous T-35's against the Mannerheim Line. In that war they found that even the squatter T-28 mediums were very vulnerable to close-in attack because of the dead space afforded by the high side of the hull; one Finn halted and finally captured intact a T-28 just by using a crowbar on one rear sprocket. When the Germans attacked, the T-35 in the battle zones generally came to a more ignominious end than the crowbarred T-28. When von Stulpnagel's army ran across some in Lwow in the very first days of the war, the Germans didn't have to take military action. Having run out of gas, the T-28s had been abandoned by their seemingly very wise crews. After their initial experience with armor in World War II, the Germans were rightly contemptuous of the T-35. They informed recruits who goggled at the big tank that the T-35 was a *Kinderschrek*—something with which to frighten children.

The T-35 was not so much of tactical as of general significance; it betrayed the nature of the mind behind Soviet military power of its day. At the time it was built Soviet Russian leaders were suffering from mental elephantiasis—the bigness cult mentioned above. They were building over-large steel mills like Magnitogorsk, and giant dams like the Dneprstroy. Military elephantiasis took the form of the T-35 tanks, the big TB-3 bombers (world's biggest in their day), and the idea of the "Flying GHQ." Because of the difficulty involved in central direction of simultaneous wars against Germany and Japan, the Maxim-Gorky—for some years the world's largest landplane—was built in 1934 to permit the Army high command to cover a two-front war.

Another aspect of the T-35's general significance is its demonstration of the degree of military achievement made possible by Soviet emphasis on war preparations. While Britain and France could afford no more than samples of such tanks, the Red Army was able to go ahead with a production order large enough to establish the actual tactical value of the concept in field exercises.

Peacetime field experience was clearly of great value to Red tankers. It is clear that with their masses of tanks available for maneuver, more than a few Red tankers hit on practical proof of the value of self-propelled artillery to their arm. This was no great discovery; others in America and England had divined as much from ivory tower ratiocination. It is therefore somewhat of a mystery why the Red Army didn't divert some of its industrial facilities to the intensive production of such weapons.

Around the middle of the 1931-39 period the Reds did mount on a 6-wheeled truck a 76-mm piece protected by a large armored shield. The piece itself was merely a short M1927 infantry cannon, for the Russians—like the US Mechanized Cavalry Brigade of the latter 1930s—used light howitzers in their mechanized outfits of brigade size. Prewar T/O's of the Red Army version of the armored division—the Moto-mechanized corps—varied, but some had a battalion of 12 of the self-propelled 76's included in each of its two mechanized brigades. The heaviest artillery of the "corps" —two batteries of 122-mm gun-howitzers and one of 76-mm guns (useful as heavy antitank)—were all truck-towed and organized within the motorized rifle brigade.

Reports in the latter part of the 1930s mention self-propelled artillery working with mechanized units; south of Moscow in 1941 a German motorized division reported engaging and destroying Red armor equipped with self-propelled artillery ranging as large as 150-mm howitzers. This report might have mistaken the 152-mm armed KV II heavy tank for a self-propelled piece. But whatever self-propelled specimens there were, were the exception, not the rule. It is admitted by the Red military that the Red Army, like the German, failed to appreciate the utility of such weapons. They were only awakened when lack of mobile artillery permitted von Kleist to escape destruction during his rout from Rostov in November, 1941. Before the war, the only standard weapons approaching the self-propelled class were quadruple cal. .30 heavy Maxims on trucks. These were intended for the protection of march column. (The US Army had tried out such light flak after World War I, and found that the type distinguished itself only by burning up ammunition.)

As might be expected from a nation the military of which has always thought highly of artillery, the Red Army always officially stressed the value of artillery in support of armor. In practice it did no better than the Germans, assigning no more than the light pieces mentioned above.

In contrast to this regard for artillery was a mid-1930s view that tanks—even lights—were a substitute for artillery in the support of infantry. The Red Army reckoned that a tank company of lights might be worth a light artillery battalion.

Around the end of the 1930s, the average Russian moto-mechanized corps and brigade was very weak in tanks—the element which the Germans found essential to the success of that type of unit. T/O strength appears to have been as much as 50% and more under that of German divisions used against the West in 1940—if the reconnaissance tin-plates are excluded, which they should be. A typical Red Army "pocket armored division" of the time—a mechanized brigade complete with three tank battalions (each 53 tanks), artillery battalion, rifle and recon battalions—ran to 160 BT's, with 19 T-37s and 24 BA-20 armored cars for recon.

Standardization of unit armament for ease of field maintenance, and for more uniform tactical performances, kept the Red Army from mixing in with their light tanks a few artillery-armed tanks for fire support. The T-28s—which as a matter of fact were fairly fast and smooth-running in cross-country work—were generally reserved for use in "tank brigades." Actually of regimental strength, around 1936 these brigades ran to four battalions of 32 T-28s each. Such tank brigades were assigned along with the mechanized brigades to corps and armies, the medium battalions usually being parcelled out for infantry support. A mechanized cavalry regiment (a fat battalion) was often included in cavalry divisions along with horse regiments; cavalry was often called on to act with mechanized brigades in enveloping operations and meeting engagements.

Compared to the German panzer and US paper mechanized division of the 1930s, the prewar Red Army mechanized brigades and corps were lacking in simplicity of organization. Various types of weapons and troops were not held under central control for assignment to combat groups according to given situations, but parcelled out in advance so that Corps and army commanders might have independent outfits to combine as they saw fit, but lower units were often stuck with clumsy, intricate setups.

The Red Army was not unaware of organization defects. The now-famous tanker Marshal Pavel Rotmistrov as a colonel complained on June 1st, 1940 in RED STAR that it was unnecessary for infantry to have their own T/O tanks. He was strongly opposed to the natural tendency of commanders to employ tanks piecemeal or on secondary tasks. He showed that good Red tankers knew how armor should be used, and were well aware of the sins against armor to which higher commanders the world over proved to be prone.

Organization and suitable development of infantry and artillery armored units was undoubtedly affected by the industrial situation. In the 1936 fall maneuvers near Minsk, rifle infantry working with a Moto-Mechanized Brigade rode the tanks into action. (The Russians sometimes paralleled US mechanized cavalry practice, and used machine-gun battalions as the infantry components of their mechanized units, the rifle battalions being borrowed when needed.) This use of tank-borne infantry was not necessarily a harbinger of later German wartime practice and of the US tank-borne infantry school started on the Anzio beachhead; the Red Infantry rode the tanks because industry couldn't provide the necessary tracked personnel carriers or trucks for their proper transportation.

The trouble was that there appeared to be a great difference between producing some ten or twenty thousand planes and tanks, and producing the hundreds of thousands of autos and trucks necessary not only for the military, but for economy required to back the military. Voroshilov was quite unable to realize his dream of an army on wheels; up to the war the Red Army remained primarily a foot and horse infantry force, with plenty of artillery and tanks and air cover.

The junior position of the Soviet automotive industry was one reason. In October of 1931, when the new tank program got going, the expanded ZIS plant was just resuming operations. In 1930, it and the Yaroslavl factory had used mostly foreign parts in their very limited output. The main new auto plant—the GAZ Russian Ford factory—was just begun in 1931; by 1937 it had built a little more than 180,000 Model A trucks and 42,000 cars.

While foreign observers considered Russian tanks fairly reliable by 1937, the same could not be said for trucks. The inexperienced engineers and labor staffs had bitten off far more than they could chew. They consistently failed to meet what were very apparently hopelessly optimistic goals. On the 1st of January 1933, the Red Planners had expected all Soviet automotive vehicles to have risen to 125,000 total from the 1928 depressingly low level of 18,000. Even this goal—picayune by US standards—they had to reduce to 75,000. During the second Five-Year Plan, intentions to build new factories had to be given up; again goals were not made. The Army and industry screamed like wounded eagles because of the quality of the trucks delivered; the auto industry whined that the parts their subcontractors supplied were of very poor quality.

These troubles were encountered despite rigorous standardization. The Ford GAZ-AA 4-cylinder Model A truck of 1931 was the main Soviet production truck right up through the war. Though they had a Soviet ton-and-a-half load rating and were produced in some six-wheel versions, the GAZ-AAs could hardly be called ideal military vehicles. (They do have surprising ability to get through the Russian mud of spring and fall.) The 6-cylinder 3-ton ZIS-5 truck which began to come off Moscow production lines in 1933 was still in production in 1946. The only other truck was a heavy 5-ton Ya-5, which Yaroslavl began under the 1933-37 2d Five-Year Plan. GAZ did not begin production of its M-I Ford 1934 V-8 passenger car until the spring of 1936. Before Russia got into the war, the best the auto industry could do for a counterpart to the US jeep was the GAZ-61—a high-sprung 1934 Ford phaeton to which engineer Y. A. Grachev added a front-wheel drive.

Under the circumstances, the 1937 claim to have come second only to the US in truck production was a deceptive use of statistics. It concealed the fact that, with heavy production and small chance of obtaining high octane gas, fuel consumption and power problems were forcing the Soviets to the introduction of Diesel engines. Whether Diesels were more advantageous in every case was beside the point; they were going to prove a necessity.

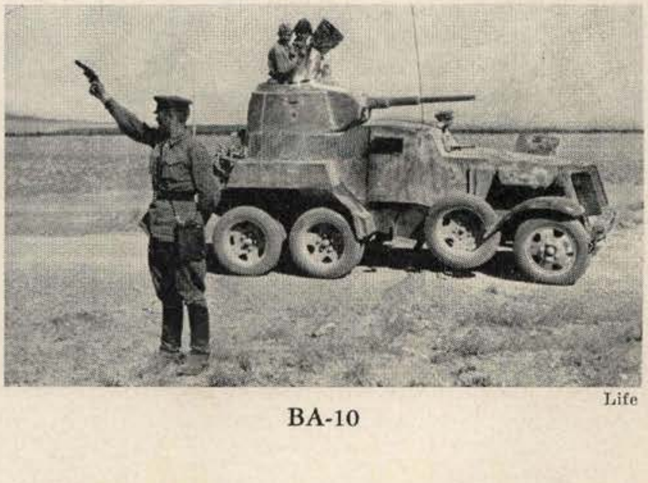
It was from this industry that the Red Army drew its armored cars. While the British Army was obtaining armored cars from luxury-trade firms like Rolls-Royce, France from Panhard, and the US from La-Salle, the Red Army built its first 1930 series cars from the GAZ-A—the four-passenger, four-cylinder car. Ford vehicles were called "BA" plus a number—the BA standing for bronieutomobil, or armored auto.

There appear to have been two main versions of light car. That on the Model A passenger chassis had one turret with DT machine gun, and was so small that the armor atop the turret and driver's seat was domed for the heads of the three-man crew. Some had no turret. Remarkable as it may seem, not all were fitted with radio.

When GAZ began to turn out the M-1 Ford in 1936, the 1934 V-8 chassis was used for a similar light BA-20—which was standard right up through the early war days. These tin plate 3-man cars were used to equip the recon elements of the moto-mechanized brigades and the mechanized cavalry regiments.

When Lord Beaverbrook went to Russia late in 1941, Stalin smilingly presented him with a set of photos proving that Russia had more armaments left than the West thought; one picture showed a great fleet of these armored sardine cans parading in Red Square. (The Germans thought so little of the BA-20s that they omitted them from their June 6, 1941 handbook on the vulnerable points of Soviet armor.)

The medium armored car was the BA-10, a 5.14-ton vehicle based on the GAZ-AAA Ford six-wheeled truck chassis. It was not a 6x6; production problems denied it a reverse—a strong contrast to the German 6- and 8-wheelers which had front and rear driving positions. Dual-wheeled, it had spare wheels centrally mounted so that they could turn and take a load should the car belly itself on a ridge. It mounted a modified 45-mm turret, and had two DT's.



Life

BA-10

With armor .24 to .39 inches thick and a four-man crew, it made 33½ mph—the road speed of a BT on tracks. The BA-10s served in Spain, the Far East, and were presented to Turkey; they were standard throughout World War II. A fancy amphibious ancestor of 1930-31, with 37-mm gun and an extra rear machine-gun turret, never came into service. Borrowing a British idea, the BA-10 was supplied with tracks which could be fitted around the rear wheels.

The only field in which the Red Army seems not to have had trouble was the armored trains. This un-Western weapon persisted (the Japs had one or more backing their 15th Division at Lake Kahasn, the Czechs, Chinese, and Poles had them too). Some were Navy-designed and manned, if used in support of coast defenses. They generally employed obsolete artillery and antiaircraft of their branch of defense service. Navy trains had guns as large as the Czarist 130-mm (130/55), with old pre-World War I 76/30's as heavy flak. Army trains used old 76-mm M1902 Putilov field guns and the Army M1914 version of the Navy 76-mm flak. Trains also had a host of single, double, and quadruple cal. .30 for protection against strafing.

More properly armored force troops were the motorcycle units, for like the Germans the Red Army used machine-gun bearing motorcycles with sidecars to support reconnaissance. These troops required their own industry; of five factories the most important were those at Moscow, Leningrad, and at Izhevsk in the Urals. Motorcyclists usually wore black padded cloth tank helmet, coveralls, and gauntlets. Sidecar troops were armed with infantry DP light machine guns they could fire (in theory) from sidecar mounts. Some solo cyclists had DT tank machine guns fixed on the handle bars, and provided with ground mount.

Like the auto industry, the tractor industry failed to make initial goals; it, too, encountered much greater difficulties than expected. Nevertheless, the big new plant at Stalingrad was in full production by the summer of 1933; the big Kharkov plant reached capacity in 1934. At first these plants produced wheeled agricultural tractors of no use whatever to the military. Opening in June, 1933, the heavy tractor plant at Chelyabinsk in the Urals had the task of initiating mass production of tracked tractors, though it, too, began on a wheeled International Harvester type. Chelyabinsk began "cat" production with a Stalinets 60 h.p. S-60, changing in 1937 to an S-65. A Chelyabinsk shift to Diesels begun in 1937 was completed in 1939. Its output was designed to be used as prime movers as well as for other civilian and military tasks. In 1938 it received a directive to turn out gas-generator (wood-burning) S-65s.

In May of 1936 Stalingrad changed over to cats, building the STZ-3—a light 52 h.p. type capable of towing light artillery. Kharkov converted to tracked tractors by 1940, building the same model at Stalingrad as the KhTZ-3. The tractor division of the old Putilov plant (renamed Kirov in 1934) at first maintained its wheeled tractor production, then added a line of small cats.

None of the STZ, KhTZ, ChTZ or Kirovets cats could be considered good prime movers for armored artillery. They could not keep pace with a fast column, for their speed was suited to the draft of World War I-type artillery lacking high speed artillery carriage axles. Their size and general characteristics made them unsuitable carriages for self-propelled artillery.

Towards the end of the 1930s special fast tracked prime movers began to appear. The first was the small armored Konsomolets prime mover. It seated two men in the armored box up forward, where a DT machine gun was mounted. Over the motor on the rear it could seat six back to back—quite in the open, except for a winter and bad weather tarpaulin. This tractor was often used as a prime mover for 45-mm antitank guns and 76-mm infantry howitzers of mechanized/motorized units. It made out very badly in the Finnish War, whereafter it was abandoned.

For medium artillery Chelyabinsk was producing a 6-ton fast prime mover, with metal cab and rear open-topped wooden box for the gun crew. For heavy artillery there was a similar 18-ton Voroshilovets, powered by a 500-HP tank Diesel. These sound cross-country vehicles didn't do Soviet armor much good since mechanized units didn't have medium and heavy artillery. They might have provided good self-propelled carriages but their potentialities in this direction went unexploited. They were not in the same class with the Samais German Zugmaschine half-track line.

The work that the tractor and auto plants were doing for industry, agriculture, and other arms than armor posed serious mobilization problems. Since the people and the army had to eat and to be supplied with the materials to produce munitions, and since the artillery had to continue to move, of what good was the convertibility of elements of the automotive and tractor industry to tank production? The Red Army personnel of the thousands of machine tractors stations might be withdrawn from collective farms into the artillery and tank troops, but what then of food production?

The intensive tank production of the 1930s had been carried on in five factories, according to Soviet statements. The work was done in special plants at Moscow and Sverdlosk, and in the tank part of the Kirov plant in Leningrad. Tank production was also done at the Stalingrad tractor factory (happily located just up the river from the Red Barricade gun factory and the Red October steel mill) and at Chelyabinsk. In the intensive military expansion of 1938-39-40-41, when the defense budget skyrocketed, planned conversions started and other plants were built or altered.

But in basing armor and other modern war material on a newly created and planned industrial system the

Soviet Union had placed itself in a strange position. The true nature of Red Military strength and its proper relationship to Western military practice could be revealed only by a major war. Some idea of the nature of the differences between the Soviet and the American position is best revealed by a listing of a few of the firms which during World War II helped the American Locomotive Company—lacking in previous tank-building experience—to produce the M7 105-mm self-propelled howitzer for the armored artillery. Among the myriad plants big and little participating in this armor venture were: The Estate Stove Co., The American Fork and Hoe Co., The Booth Felt Co., The Cortlandt Boot Jack Co., The Fort Plain Garage, The York Ice Machinery Corp., The Detroit Suspender and Belt Co., The Electric Sprayit Co.

In Russia, the order of industrial precedence favors first heavy industry, as the origin of all power, military and economic. Second comes the war industry. After that come industries necessary to the efficiency of the first two groups; this class includes industry which produces things like alarm clocks, to get the workers up on time. In reverse ratio to what has made the US and other Western powers industrially great, at the bottom of the Soviet industrial priority system are those catering to the civilian consumer. The Cortlandt Boot Jack Company would have had a terrible time justifying its existence in the latter 1930s in the planned socialist Soviet economy. In Russia, the industrial slack represented by such firms was almost nonexistent.

Purchase of the old Zeiss plant from the Germans (Zeiss used the money to re-tool with modern equipment) helped put the Red Army in a relatively good position as regards optical equipment. Whereas as late as 1940 US Armored Force MI Combat Cars and M2 Series light tanks had only slits for vision, the Russian light, medium, and heavy tanks had turrets fitted with one or two rotatable periscopes atop the turret (usually the gunner had just his gun-laying telescope, the tank commander a periscope). Drivers had an episcope. True, such vision devices were not installed in the first tanks, but were supplied around the 1930's as related industry made them available. This optical equipment generally was of high grade.

With no great civilian electronics industry to back the military, it might be expected that radio was a headache to the armored force, both qualitatively and quantitatively. In general, only platoon, company, and higher commanders' vehicles had radio which appears to have been a transceiver. Platoon commanders (as did US company commanders in 1940) handled their tanks by flag signal. The Russian tank helmet was always designed for integral headphones, but no intercom equipment such as the German and British used, was fitted.

Command tanks throughout the 1930s were dangerously apparent because the armored antenna used were thick rods fitted to the sides and rear of the main turret like handrails. The BT and T-26 series tanks had plenty of room for radio in the rear overhang of their turret; so did the mediums and heavies. Turret tops appear to have been fitted for buggy-whip receiving antenna, but not till just before the war did such aerials appear. Then they were apparently used to replace the conspicuous armored antenna. Radio remained a great and obvious deficiency. When the war began, the aim still was to have one radio to each three tanks.

Despite seeming topside disinterest in armored artillery and infantry, the Red Army tankers early tried out such wrinkles as the ST-26 bridge tank (a 1934 development which carried a girder atop its chassis). At the same time they modified T-26s for flame throwers; in the assault on the Mannerheim Line versions of the improved flame throwers on T-26s had a range of only some 48 feet, air flasks and gallons of oil being carried in the roomy turret. They also furthered Czarist propeller-driven sledges; lightly armored ones mounted a DT, ran on skis, and were driven by the ubiquitous little M-11 radial aircraft engine.

By 1939 the Red Army had changed its mind about not using tanks in night combat. Many light and medium tanks were fitted with a pair of auto headlamps mounted just over their guns. After the Finnish war the idea of tanks illuminating their own targets seems rightly to have been abandoned.

Since the Italian and Germans had thought of flame-throwing tanks at about the same time, the Russian flame T-26s demonstrated no remarkable originality. However, in the taking over of Bessarabia from Rumania in 1940 the big TB-3 bombers landed T-38 amphibians they had carried secured under their bellies. Before that, Russian military glider designers, active since 1932, had come up with a tank-glider. A smaller T-26 with 45-mm gun comprised the fuselage; on its rear was secured two tail booms and a large set of one-bay biplane wings. Spoliers and flaps galore were fitted to make possible a slow landing speed. This glider, by O. Antonov, was called the AT-1.

A Russian improvisation tried out with success against the Mannerheim Line, involved the towing of tank-protecting supporting infantry in open-topped armored sledges. It worked because the Finns were weak in mortars. Of more lasting military value was the doctrine the Russians worked out for combat in the varied types of terrain peculiar to Russia. Their regulations had to deal with armored war on plains—the vast stretches of treeless open steppe; with combat in extensive forest and marsh; and of course with winter warfare. While many uninformed Westerners laughed at the Russian failure in Finland at the Kemi River and Souomisalmi, Colonel William Shippe (who had toured those parts of Finland as US military attaché) joined well-informed European military men in expressing his amazement and concern that the Reds were able to operate any heavy equipment in those Arctic forests and wastes in December and January.

Despite their vast tank and plane programs, the Reds were nervous enough to sign a defensive pact with the Czechs and French as early as 1935—when the new Hitler war machine was hardly hatched. The armament program for the 3d Five-Year Plan announced the next year included a large-scale program of fortifications in the West (a considerable reversion from early ideas about mobile war), and more emphasis on creation of new ones beyond the Urals. Annual production of autos and trucks was to be upped to 400,000 a year by 1940. The planners intended that the third plan would stress actual armament work far more than the first two.

This emphasis on armaments, plus the progress already made with tanks, by 1938 brought to a close the "Middle Ages" of Soviet armor. It became possible to initiate a new era and a new wave of tanks. Soviet engineers, with names previously unknown, met in 1938 and 1939 to design a series of new tanks. The engineers of the Kharkov Diesel plant had acquired enough know-how to have perfected a good Diesel aviation type engine. Stalin, taking as close personal interest in armaments as has been Churchill's habit, is said to have used his dread direct influence to bring about a design miracle.

In 1940, two new tanks that were literally to revolutionize armor were actually in production. The medium and the heavy in speed, armor, and gunpower—and in many other less vital military characteristics—were far ahead of any tanks of the day. In many other less vital military characteristics, and in production aspects, they were also outstanding.

After almost a decade of brooding Soviet engineers and tankers were about to come into their own. As yet uninhibited in the development of military theory by established cliques; able to study and profit by foreign thought and progress without menace to the position and prestige of individuals, or to the industrial and the vested interests of engineering staffs, of bureaucrats, of arms, or branches of national defense, the officers of the Red armored force and the engineers of the tank engineering service were in a comparatively fortunate position compared to their opposite numbers in Western forces.

The question as to whether the Red politicians had been a help or a hindrance had yet to be answered. At any rate no one could deny they had mobilized the entire nation behind the army, and made the Soviet peoples very tank-minded as well as air-conscious.

As regards personnel, Red forces had many trial runs. Experiences acquired as a result of the mobilization of the Leningrad Military District to beat the Finns had revealed that the junior officers were well below standard. Luckily, Hitler gave the Red Army high command a year and more for intensive pre-training. The previous occupation of Poland in 1939 had provided some interesting work by armored forces. Though beset by doubts, the Army enjoyed tightened discipline; its fighting spirit benefited from the fruits of a patriotism campaign begun as early as 1934. Buffer zones had been acquired to slow down any German panzer punch; vast fortifications had risen to protect those zones—far more than had existed in old pre-1939 Soviet Russia.

As for armor, the Reds knew that their accumulated tank strength made a piker out of Max Werner and his 1939 figure of 20,000 tanks; there were 21,000 Red tanks in June 1941. Included in this vast number were growing quantities of the hush-hush heavy and the new medium—tanks in comparison to which the contemporary German Pzkw III's and IV's were tin-cans armed with popguns; tanks which 88's would have to work hard to knock out, and which the standard German 37-mm antitank guns could bombard without results.

Over this mass of armor flew more planes than Goering liked to think of. When his technical chief, General Udet, visited the Kuibeshev aircraft engine combine in the spring of 1941 and was as impressed as the Russians hoped he would be (he held that this one complex exceeded in productive capacity all six major German engine plants), Goering told him not to mention the matter again, on pain of the concentration camp.

What happened when Hitler blindly threw some 4,000 tanks and a similar number of planes against this mass of armor and the vast tactical air divisions which could support it? The answer is already history—a history that has yet fully to be grasped.

In that answer is to be found a lesson undoubtedly most significant for the mass of materialistically minded Americans whose imagination, like that of the Reds of the 1930s, has been captured by statistics on the power and quantity of material. It is very apparently a lesson in the relative importance of the man and the machine—of the place of ideas, skill and fighting spirit in a war that many prophets had predicted would be entirely dominated by the tank, the plane and the motor.

* * *

The ARMORED CAVALRY JOURNAL is available in the European Theater through Stars & Stripes distribution, and in the Pacific Theater through the Post Exchange system. It is available in the ZI at the Pentagon Newsstand and in the Book Department at various posts and stations. Single copies 75¢.

OUR FINEST HOUR IS NOW

A DECADE ago the world hung in a pre-storm vacuum. Events were shaping up whose eruption would inspire Britain and the British people to advance into their finest hour. As the storm descended, Winston Churchill stood forth, the personification of a country, a people and a cause.

If the term "World's Senior Statesman" may be coined and bestowed, Winston Churchill is the logical recipient. More than any other individual, he has been a key figure in half a century of history. His currently publishing volumes on the Second World War have a significance attributable to few other works.

THERE have been major changes in thought and opinion through the war years. We have come out of the fighting a bit closer to the pulse of history. Today we may analyze a situation not unlike the one that led to Britain's finest hour. Out of our experiences and capabilities we have the means to avert a repetition of that measure of Time—a repeat that might well find *us* in the primary position of clock watcher, ticking off the minutes in *our* hour of destiny.

The present Churchill volume, reviewed elsewhere in these pages by Charles Collingwood, is much more than an outstanding history of the war; is much more than a recapitulation of the happenings of 1940. It is an appropriate document to appraise against the events of the moment. In a manner, it can be considered as a guide for present and future policy. It should join with other common factors to indicate the course we must set and hold if we are to avoid more of the fearful consequences only recently brought to a successful conclusion.

There is enough inspiration in the Churchill volume to indicate that our finest hour can be the one springing not from an ultimate pinch, but from an awareness of our problems and their adequate meeting. The part we played in the winning of the war is history. Our finest hour now hinges upon peace and its maintenance, with the full preparation for any eventuality which is contingent thereon.

1949 IS a significant year, not only of itself, but in its relation to the past and the future; to what has been and what may be. It terminates a turbulent decade of history. In the mirror of the years, 1939 shows us making our way in blissful solitude, unaffected by a conference at Munich, where political integrity, joined with weakness, knuckled under to political immorality backed by strength. Then we were detached and remote from the dismemberment of the Czechoslovak nation. Today, American soldiers guard the peace along that country's border with Germany.

In 1939 there were the Czech Crisis, the Italian Invasion of Albania, the German-Russian Pact, and the German Invasion of Poland. In all of these we were distant bystanders. Today, ten years later, we step forward with new responsibilities, exercising our leadership and participaation in world affairs through the Marshall Plan and the North Atlantic pact.

IF any lesson is evident from this period, it is the fact that strength will best maintain integrity. Full support of the United Nations, along with a balanced force for national defense, and a policy based in the ideals which make our country great, join to equip our country for its role in world affairs. Moral strength backed by physical force comprise a winning team. We are well into our finest hour.

ROUTE B
NOT MARKED
BEYOND THIS POIN

U. S. Army

CONTACT AT HOUFFALIZE

CARDED

by MAJOR MICHAEL J. L. GREENE

"*16 January 1945*—At 0905, 41st Cavalry of the 11th Armored Division made contact with 41st Infantry of the 2nd Armored Division in Houffalize, thus terminating the Bastogne Operation so far as the 3rd Army is concerned."

THUS did General Patton in his notes on the Bastogne Operation refer to the accomplishment of the mission which had been assigned to a task force composed of troops of the 41st Cavalry Reconnaissance Squadron. Although it would be difficult for any one of the participants in this undertaking to condense twenty-four long hours into one simple sentence, it must be admitted that the Third Army commander's note does state specifically what happened, albeit from the Army Headquarters' point of view. For those of us on the ground, the contact established between the First and Third Armies at Houffalize, Belgium, on the morning of 16 January 45, was the climax of a struggle against Germans, terrain, and weather.

A month prior to this time, we of the 41st Cavalry Reconnaissance Squadron had been with the other elements of the 11th Armored Division in south central England—doubtful that we would ever get across the English Channel or into combat. When the sudden orders came for our move, we had no idea of the seriousness of the situation in Belgium, which became increasingly apparent as the squadron made a forced march from Cherbourg to the Sedan-Givet area on the west bank of the Meuse River, thence across this river on 24 December 1944, "with the dual mission of securing liaison with British forces on the north and establishing contact with the enemy northeast of the Meuse River." It was not until this date that most of us in the lower units knew that the Germans had broken through the American lines in the Ardennes sector of Belgium and France, and were attempting to split the Allies. With the crossing of the Meuse, we knew that we had finally realized our desire "to get into the fight." For the next twenty-one days we were actively engaged in the main effort to close "The Bulge" and shut the door to Western Europe which the von Rundstedt offensive had opened.

The final phase of the fighting in the Ardennes salient was characterized by the concerted drive by the 1st and 3rd U S Armies on the key town of Houffalize, Belgium, on the Ourthe River, ten miles north of Bastogne. The 41st Cavalry Reconnaissance Squadron was the 3rd Army unit which was given the mission of contacting the 1st Army in the vicinity of Houffalize. This action by the squadron which terminated the Bastogne Operation covered a twenty-four hour period which can be discussed in three phases—the preparation, the move to contact, and the actual contact.

PREPARATORY PHASE

To achieve the proper perspective of this action, it will be necessary to consider first the preparatory phase—those few hours immediately preceding the assignment of the contact mission. During the month of January, the entire weight of the 3d Army was in the attack directed at driving the Germans behind the Siegfried Line. The 11th Armored Division was directed to relieve elements of the 101st Airborne Division in the vicinity of Longchamps and to launch an attack northwest as far as Bertogne, and thereafter east to seize and secure the high ground south of Houffalize.

On the morning of 15 January 45, the 41st Cavalry Reconnaissance Squadron (less Troop B), attached to Combat Command A, was deployed along the northern fringe of Les Assins Woods in the vicinity of Monaville, Belgium. These woods had been cleared of the enemy the day before in a dismounted attack by Troops A and C abreast with Troop E (assault guns) and Company F (light tanks) in direct support. The advance had been made against heavy mortar fire, some artillery, and moderate resistance from ground troops armed with automatic weapons. This action had inflicted heavy casualties on both troops; Troop A experienced particularly severe losses. As the objectives were attained, it became

ABOUT

THE

AUTHOR

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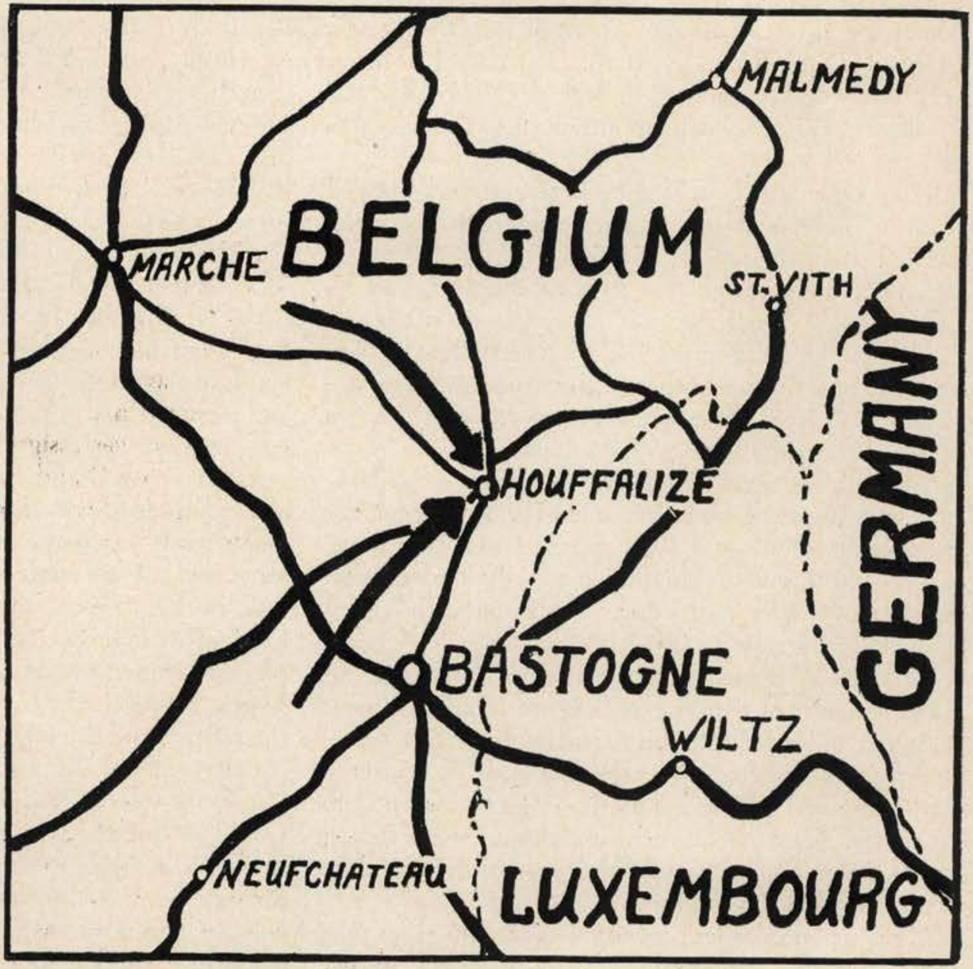


Map 1

necessary for Troop D to replace Troop A in the line, so that the commander of Troop A could reorganize and re-equip his unit preparatory to resuming the attack on the next day. At approximately 1800 that evening, elements of the 193rd Infantry Regiment, 17th Airborne Division were moved in to reinforce the squadron. The combined units, airborne and reconnaissance were prepared to continue the attack on the right flank of CCA.

Plans for renewal of the attack were changed the next morning. At 1100, 16 January 45, the squadron was ordered to release control of its sector to the 17th Airborne Division units and to withdraw from position, reassemble in the vicinity of Monaville, and then move to the north and east of Bertogne to protect the northern flank of CCA in its advance to the east. Company F moved first, at 1300, to the vicinity of Rastadt, and outposted the roads to the north. At the same time the 2nd Platoon of Troop A was assigned the mission of proceeding northeast to the Ourthe River in the vicinity of Grinvet and to contact patrols of the 1st Army in that area.

Lieutenant Colonel H. M. Foy, the squadron commander, with the remainder of Troop A, proceeded to Bertogne to report to the commanding general of CCA, Brigadier General W. A. Holbrook, Jr. I, as squadron executive officer, was directed to remain in Monaville to direct the movement of the other troops (Hq, C, D, and E). By 1630, all troops had been withdrawn and had started to Bertogne, so I closed the headquarters in Monaville and moved to the new sector.

No sooner had I arrived in Bertogne and jumped from my half-track than General Holbrook and Colonel J. J. B. Williams, the division chief of staff, came up in their ¼-ton vehicles, to see Colonel Foy. I reported that Colonel Foy was forward with Troop C.

General Holbrook said, "We have another mission that you and the remainder of the squadron must undertake. This is an extremely important mission—a 'must,' directed by the Army commander."

I told the general that I had some troops available and that we could start immediately. What was the mission?

"We must get to Houffalize tonight and contact the 1st Army as it comes down from the north," General Holbrook stated.

Colonel Williams then spoke up, "This is a difficult assignment for anyone because Houffalize is at least ten miles behind the German lines. But someone must get through to establish contact with the 2nd Armored Division as it comes down from Achouffe. They may already be there. General Patton wants this mission accomplished without delay and he wants this division to do it."

"Here is an excellent reconnaissance squadron mission," General Holbrook said. "We've got to get around to the northern flank of the division and then through the German lines if they extend that far. It should be interesting!"

I instructed the S-3 to alert Troop D, an assault gun platoon, and any tanks that might be available. Then the general, the chief of staff and I began a serious map study to see just what this assignment would entail. True, Houffalize was approximately ten miles behind the lines; was on the dominating high ground; the routes of approach, except by way of the main highway, were indistinct snow-covered trails through the woods; and dusk was already approaching.

We had gotten word to Colonel Foy that an important situation had arisen, therefore he came back to the squadron CP. Then we were able to organize a small task force composed of Troops D and E, the 2nd Platoon of Troop A, and Company F. I was placed in command of this composite group and assigned the mission of proceeding northeast to meet elements of the 1st Army, believed to be in the vicinity of Houffalize, the Corps objective.

It will be recalled that the tank company and the 2nd Platoon, Troop A, were on outpost and patrol missions on the combat command flank. These two units were directed by radio message to rally in the vicinity of Rastadt, and the commanders were to meet me at the edge of town for further orders.

Since the morning of 13 January when this attack began, the full strength of the Corps had been focused on Houffalize. The Corps commander now directed that this objective be reached without further delay. CCA, organized into two task forces, had been attacking eastward astride the Bertogne-Compogne-Mabompré road all during the day. An integral tank task force had pushed rapidly eastward clearing the Pied Du Mont woods at 1130, Compogne at 1510, Rastadt immediately thereafter, and Velleroux shortly before dark. During this attack by CCA, the 41st Cavalry had been moving from Monaville to Bertogne to be employed as the security element for CCA left flank and as stated had just closed into Bertogne when this new mission was assigned.

With Troop D and Troop E, I left Bertogne at 1730 advancing northeast thence east to the previously indicated rallying point. One platoon of Troop D was sent ahead of the column as the point unit and to conduct necessary route reconnaissance. Just as we were leaving, an A Troop jeep carrying a seriously wounded sergeant came in from along our proposed route. The sergeant's jeep had struck a mine some two miles from the village, and the sergeant believed that there was an extensive mine field across the field north of the Pied Du Mont woods. If this were correct, the mine field would be directly across our proposed route of march.

From Bertogne to Rastadt, I rode in my half-track directly behind the last vehicle of the point. The column had advanced only about two miles when it came to a sudden halt. Anxious to keep moving as long as there was some daylight, I ran to the head of the column to ascertain the reason for the delay. The point commander was standing in front of the lead ¼-ton.

"What's the trouble, Tousley?" I asked.

"Major, we've found that mine field. Here it is, right in front of us and there don't seem to be any clear lanes." (He had checked for about 100 yards on either side of the trail.)

No mines were visible to our immediate front, but they could be seen just under the snow to the right and left. I noted that there was evidence that two or more vehicles had passed through the mine belt a few feet to the right of the main trail. Not wanting to delay any longer and not being able to find any by-pass, I ordered one ¼ to move ahead along the trail—through the mines! The ¼-ton made it! The other vehicles of the point, six in all, then proceeded through the same gap. I stood at the entrance to watch them by.

As the command half-track drove up, I stepped up on the battery box and motioned the driver forward. In the split second that followed, there was a terrific blinding explosion and then everything went black for a few seconds. As I regained my senses, I found myself sprawled in the snow about ten feet from the badly damaged half-track. A quick check indicated that no one had been more than badly shaken, but that the half-track was now immobile. The left front wheel had struck a mine just as the vehicle started forward.

Realizing that it would now be impossible to get any other vehicles through the obstacle at this point, I directed that all effort be devoted to finding a possible by-pass. Shortly thereafter, a soldier drove up in a ¼-ton to say that he knew of a route around the mines and would guide us the rest of the way to Rastadt (he then told me that he had been sent to meet us and show us the proper route). Had I waited for this guide or spent more time looking for this by-pass, I could have saved my half-track and some unnecessary strain on the men's nerves. But in my mind there existed the definite possibility that this mine field could have delayed me for many hours. I believe that the loss of the half-track and the anxiety of the men were small price to pay to avoid delay.

After I had commandeered an armored car from Troop D and re-established communications with my command and squadron headquarters, we continued on to Rastadt.

Meanwhile, the other elements of the combat command were very heavily engaged with the enemy in the vicinity of Velleroux. These forces were astride the main road and were endeavoring to continue the advance to the northeast. At 1910, leading elements of the tank task force, continuing eastward through a defile between Velleroux and Mabompré, were heavily counterattacked in the northern flank by enemy tanks, artillery and antitank fire. As a result, the task force was forced to withdraw to the high ground west of Velleroux. The enemy was believed to have withdrawn in the direction of Bonnerue and Houffalize. All of this action had taken place while I was en route to Rastadt from Bertogne.

When I reached Rastadt, I found that the tank company and the Troop A platoon were assembled as had been directed. The town and its inhabitants, civilian and military, were in a state of complete confusion and excitement. Troops of the CCA task force, driven from position east of Velleroux, were falling back into Rastadt, which was still burning as a result of the fighting that had taken place there a few hours earlier. To add to the confusion, it was completely dark except for the light created by the burning buildings, and consequently the officers and noncommissioned officers were having a difficult time reorganizing their units. Captain Mullins, the tank company commander, told me that he had assembled the other 41st Cavalry officers and noncommissioned officers in an abandoned house nearby. He knew that I would want to have these men together for the detailed planning and issuance of orders to effect the accomplishment of our assigned mission.

I fully realized that it was going to take a great deal of map study and planning if I was to get this force to Houffalize. Before any orders could be issued, it was imperative that I, assisted by suggestions from the other officers, make a thorough study of the situation and terrain that confronted us. This study reemphasized the fact that no one in our assembled group had ever made a personal reconnaissance of the proposed area of operations, that it was now completely dark and visibility was very limited, and lastly, that none of us knew the location or the strength of the enemy.

The region through which we were to move was typical of the entire Ardennes locale. There were no main roads—the only road of any consequence was a single lane dirt road from Rastadt to Bonnerue, thence north to the Ourthe River at Grinvet; all other routes were mere logging trails through the forests. The woods were very thick due to the government's reforestation program. If forced off any road or trail, the only alternative would be to dismount the men and walk. The map showed that the only available route from Bonnerue to Houffalize was a trail through the dense Ardennes—this trail crossing a stream which flowed into the Ourthe River through a deep valley just west of Houffalize. As if these tricks of nature were not enough, we were faced with the problem of advancing through a minimum of eighteen inches of snow which had undoubtedly drifted in many places. My map study indicated clearly that the terrain would be as formidable as any enemy we might encounter.

The meager facts supplied by the CCA elements that had been in action during the day were the only information we had of the enemy. The consensus of opinion was that, after the counterattack in the vicinity of Velleroux, the Germans had withdrawn to the northeast in the direction of Houffalize or to the north in the direction of Bonnerue. It must be borne in mind, however, that any information obtained from combat elements tended to be slightly colored by fruitful imaginations. After careful consideration of all known facts, it was clear that contact could be expected en route to or in the vicinity of Houffalize.

Based upon a detailed map study, personal knowledge of the Ardennes type terrain, and the enemy information available, I evolved my scheme of maneuver. The task force would advance initially in a column prepared to split into two forces—a main body and a reconnaissance unit—where possible. The mission of the so-called reconnaissance unit would be to continually probe to the flanks for alternate routes. From Rastadt, we would move in one column for about two thousand yards to a point where a trail branched to the right of the Rastadt-Bonnerue road. I anticipated that the main route would be blocked at this point, and planned to have the reconnaissance unit select another route or to outflank any hostile force at this junction.

The column organization in order of march at this time was as follows:

RECONNAISSANCE UNIT

Troop D (–1 platoon)
1st Platoon, Troop E

MAIN BODY

2nd Platoon, Troop A
Company F (Tanks)
Troop E (Assault guns) (–1 platoon)
3rd Platoon, Troop D

My command vehicle, a tank, was located at the head of Company F.

Upon clearing the woods south of Bonnerue, the scheme of maneuver called for us to skirt the village to the south and east and to re-enter the woods on any passable trail. The reconnaissance unit was to locate, if possible, a feasible route around Bonnerue, into the woods, and on to the objective, avoiding enemy contact in so far as possible.

During this initial conference, no specific orders for the seizure of Houffalize were issued. This phase of the operation was still in the preliminary planning stage. However, in my mind, I envisioned that there were three distinct steps to be taken to assure successful accomplishment of the mission. These steps were (1) to dispose troops to observe and contain any Germans still in the town, (2) to seize the high ground south of Houffalize as a means of assisting CCA, and (3) to dispatch patrols across the Ourthe River in an effort to establish a junction with 2nd Armored Division.

The plan for the advance on Houffalize was discussed with the key officers and noncommissioned officers. I issued the necessary orders to implement this plan and directed that all personnel be thoroughly oriented as to our mission and the steps to effect its accomplishment.

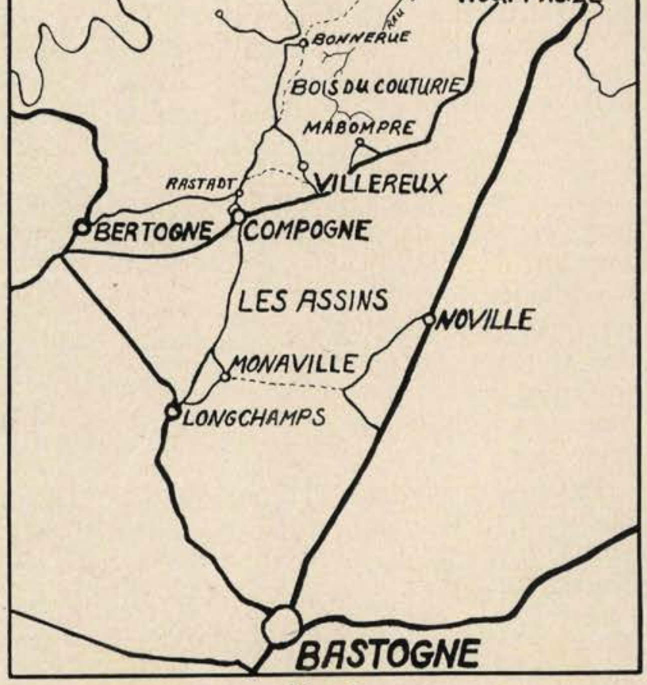
After these commanders had returned to their units and briefed their men, I ordered Troop D to initiate the move toward Houffalize. Troop D was en route by 2300—and a long, tense night began.

MOVE TO CONTACT

When I departed from Rastadt on that night of 15 January 1945, I did so very reluctantly. I had no conception of the potentialities of the next few hours; indication of enemy locations was confused; no daylight reconnaissance of the route ahead had been made; and I had visions of our being another heroic but useless "Lost Battalion." In spite of these shortcomings, however, I felt that I had a compact, effective force and a sound, workable plan of operation. The combination of these two should form a successful team.

I was soon to learn that the plan, as it is with all others, was subject to change without notice and that it must be highly flexible to be usable.

Troop D, the leading element, had advanced two thousand yards when the first change in plans occurred. At the road junction where the column was to split into two units, we found that we were blocked by several large craters that had been blown in the trail to the right. The woods here appeared to have been bombed or heavily shelled and as a result it was impossible to use the other route. Therefore I ordered the entire column to continue on the main axis of advance until we had emerged from the woods south of



Map 2

Bonnerue. At this point, I would make further changes that might be expedient.

I had hoped to by-pass Bonnerue by moving cross country to the south and east; however, I soon found that this plan was not feasible. The country was open —not wooded—but the snow had effectively concealed any possible trails, and cross-country movement would be hampered by the rugged terrain. The only alternative was to go through the now dark village.

The movement of the column was by bounds—one unit moving into and through the town while the other units covered this move. By this means the entire column succeeded in getting through Bonnerue and onto the trail to the northeast without any incidents other than the fact that a few vehicles deviated slightly from the correct route. (The next morning, another platoon of Troop A, passing through this same village, captured the remnants of a German company in hiding there through the night.)

Upon reaching the high ground northeast of Bonnerue, the task force was reorganized and then continued on its mission. The nature of the route from here on dictated that we proceed in one column through the Bois du Couturie to Houffalize. The composition of the column now was:

2nd Platoon, Troop A
Troop D (–3 Platoon) (1 Platoon, Troop E, atchd)
Company F
Troop E (–1 Platoon)
3rd Platoon, Troop D

Now the terrain, the night, and the weather became our main foes. Progress through this heavy, sinister forest was a slow, tedious undertaking. Lieutenant Ellenson virtually walked the entire distance because it was necessary that he constantly check and re-check to be certain that he kept us on the correct route. Many times the map did not match the ground in either direction or location; very probably this disagreement was due to the illusion caused by the deep snow, the darkness, and the nervous tension. All of the men were "on edge," expecting an attack at any moment from any direction. Actually no enemy was encountered during this movement, but I believe that the presence of a real enemy would have relieved a great deal of the nervous tension. As it was, the column proceeded slowly, nervously and anxiously through the long, dark night hoping that the next minute would bring daylight and the objective.

By 0300, we had reached the bridge across the Rau de Suhet, about two miles west of Houffalize. Upon arrival, I was greatly relieved to find it still intact. During my preliminary map study some six hours earlier, I had made a mental note of how an effective block could be created by destroying this bridge. However, the Germans had evidently missed an opportunity to delay our column because the bridge had not been destroyed.

But before I could fully appreciate our good fortune at this point, I found that across the stream there was indeed an obstacle—more effective than any man-made block. Immediately beyond the bridge the trail went up a steep slope, about forty degrees, which was now covered by a coat of ice. It was impossible for any wheeled vehicles to move up this hill under their own power. After several attempts to "rush" vehicles up the grade and concurrent efforts to hastily corduroy the roadway, it was decided that the tanks would have to be used as prime movers for the other vehicles. Consequently, all available grousers, a maximum of two per tank track, were distributed and the slow process of pulling vehicles up the one-hundred yard long hill began. While about one third of the personnel were thus employed, I directed that as many men as possible make maximum use of pioneer tools to chop ice from the road. Any other men not otherwise busy were to man the vehicular weapons to guard the column against surprise attack.

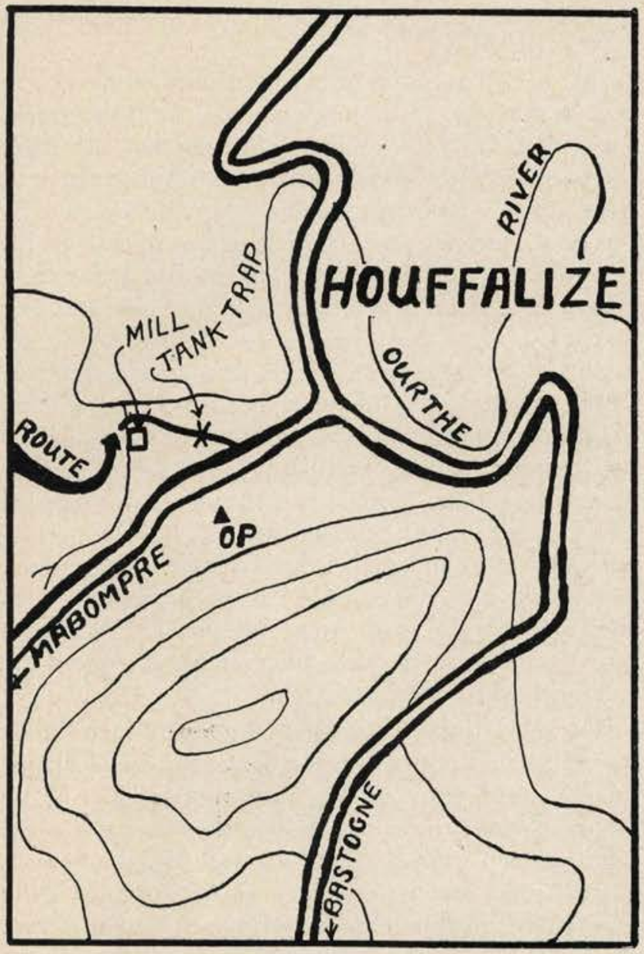
The move from the bridge to the top of the hill took two and a half hours. It was a continual battle against the ice, the night, and the increasing fatigue. Many men, especially those immobile in the vehicles, started falling asleep from sheer exhaustion. For this reason, it was imperative to detail an officer to continually "ride herd" on the column and to get it reorganized. As each individual vehicle reached the crest, it resumed its place in the column and awaited those still to negotiate the slope.

By 0530, all vehicles except the assault gun ammunition trailers were up the hill, all the men had been awakened, and we were prepared to continue on our way. The remainder of the route was the usual snow-covered, indistinct trail but without any serious hindrances to our advance.

At 0630, the column emerged from the Bois du Couturie and made the descent into the Ourthe River valley. As we rounded an unfinished water mill at the foot of the hill, our goal came into view some six hundred yards to the east. Perched on the ridge to our front stood Houffalize, a prewar resort town, now the focal point of a determined Allied effort to crush the German offensive.

CONTACT

Up until the moment that the lead armored car fell into a tank trap, I had firmly believed that the task force could sneak into Houffalize undetected. But a few minutes after passing a water mill, the first armored car of Ellenson's platoon dropped through the light coat of snow into a hastily dug, but well concealed, trap in the middle of the road. We were within two hundred yards of our target—within sight of Houffalize, but blocked by one of our own vehicles.



Map 3

Inasmuch as the assigned mission was to get to Houffalize and contact elements of the 2nd Armored Division to close the now-famous Ardennes Bulge, we had to go ahead in spite of the armored car. To make a personal reconnaissance of the approaches to the town and to be able to report that the task force had reached its destination, I took Lieutenant Ellenson and walked ahead two hundred yards to the city limits sign. We walked around this sign a couple of times and congratulated each other upon the fact that we had finally reached Houffalize.

As we started back toward the column, Lieutenant Ellenson suddenly said to me, "Say, Major, there's someone up there on the hill to the left. It looks like an OP to me."

I could see where he was pointing and there did appear to be a man, or two men, in a foxhole. Lieutenant Ellenson shouted several times in an effort to attract the man's attention, but got no reply.

"Let's go up there," Ellenson said. "It's probably a 2nd Armored patrol."

Without thinking, I said "Okay," and we started up the hill. Ellenson hollered to his car commander, Sergeant Till, that we were going up the hill and would be right back.

We climbed up about fifty yards until we were within fifteen or twenty feet of the outpost. Our high hopes were dashed to the ground as the man in the foxhole stood up, trained a machine gun on us, and shouted something in German. Both of us stopped dead in our tracks and reflected for a fraction of a second as to what we should do. Ellenson's only weapon was his flashlight and mine was my pistol, snug in its holster. Before we could think very much, the German again said something that sounded much like "Hands up!"

Lieutenant Ellenson threw his flashlight down and put his hands up saying as he did so, "I guess we are caught, Major."

I hesitated for a second, just long enough to shout to Sergeant Till, "This is a German up here—fire at him."

Fortunately, the alert sergeant heard me. He fired the antiaircraft machine gun in the direction of the German. This fire diverted his attention long enough for Ellenson to slide down the hill and for me to jump behind a nearby log. Why the German did not fire at us, I shall never know. Instead, when fired on, he jumped out of his foxhole and ran back into town. Ellenson and I hastily returned to the column.

The firing by Sergeant Till seemed to awaken what troops there were in Houffalize because immediately small-arms, antitank, and mortar fire began to fall all around us. I directed that the armored car in the trap be abandoned temporarily and that all other vehicles seek protection behind the mill—the town dominated the field east of the mill which the column had started across.

The sudden outburst of activity made it quite evident that Houffalize was still occupied by the enemy. If I were to establish contact with 1st Army units, it would be necessary either to get into the town, to get patrols across the Ourthe River to the north, or to just sit tight until I saw friendly elements approaching from the north and northwest. I decided to do all three things in combination.

The plan at this time was to contain the German troops in the town by assault gun (75mm) fire from our present position; to dispatch Troop D dismounted to the high ground south of the town to report what enemy or friendly activity they observed; and to have the tank company push closer to our objective on either side of the river. The remaining unit, Ellenson's platoon, was to keep on the alert to detect the approach of any friendly patrols.

I reported by radio to squadron headquarters that patrols had reached the objective; that it was still occupied by German troops; and that as yet no contact had been established with the 2nd Armored Division. In return I received a message to the effect that CCA would continue its attack at about 0800, astride the Mabompré-Houffalize road, and therefore to be alert for the approach of these troops from the south; also, that there was no additional information as to the location of First Army troops north of the river. I later learned that CCA and CCB of the 2nd Armored Division were disposed along the high ground some 1500 yards north of our position.

I would have known the exact location of 2nd Armored Division troops earlier if arrangements had been made at squadron or division headquarters to establish direct radio communications between the two divisions. As it was, the only contact was through Army channels. Quite possibly, "on-the-spot" contact between the two armies would have been established hours earlier had the two advancing divisions been in radio or telephone communication.

At about 0800, Troop D reported its dismounted men in position. From the high ground, this troop could observe activity in Houffalize and its environs. Thus they could report the movement of enemy reinforcements into the town or the approach of CCA from the southwest. In addition, these men were well situated to provide forward observation personnel for the control of the assault gun fire.

With reference to assault guns, I came to the conclusion that it would be possible to place only one platoon (two guns) in firing position in the vicinity of the mill. The most forward platoon, 1st Platoon Troop E, was moved into the open field just fifty yards east of the mill. True, this was a vulnerable point, but it was the only suitable firing position in the immediate area; however, the enemy mortar and small-arms fire from Houffalize was sporadic and inaccurate. I believed that the Germans were firing unobserved harassing fire and that their field of fire was limited. Once the assault gun platoon was in position, it opened fire on the town in an effort to neutralize enemy forward observers and antitank weapons. While these guns were firing, the troop commander, Captain Krivak, was making a reconnaissance for favorable positions for the other four guns. He recommended that these platoons fire by indirect fire methods from their positions in the column. This I approved. The method of indirect fire was made possible and effective by use of the Troop D forward observers located on the high ground overlooking Houffalize.

Now that I had a firm base of fire and a holding (or observing) force, I was especially desirous of getting a maneuvering force into use. I planned to use the light tanks for this purpose. With this in mind, the tank company commander, Captain Mullins, and his other officers and senior noncommissioned officers conducted a thorough reconnaissance for suitable routes. They were looking for a means of getting into Houffalize either by crossing the Ourthe or by swinging to the south and entering the town through Troop D's position—the frontal approach to the objective was under German observation and the armored car was still blocking the road. All reconnaissance to the river and along trails other than the main one proved futile. There were no vehicular bridges or fords across the river and all other trails were effectively blocked by felled trees interlaced across them. The only tank approach to Houffalize was the route we were on—across the field dominated by the town itself.

I directed that, under cover of assault gun fire, a tank be sent forward to pull the armored car out of the trap. This was done, only to cause an appreciable increase in small-arms fire which began to become increasingly effective. The tank threw a track as it was just starting to pull the armored car free. Consequently, another tank was dispatched to complete the job. After several unsuccessful attempts, the disabled vehicle was pulled clear. At this moment, heavy mortar fire began to fall on the exposed assault gun platoon. This fire had telling effect as it hit in the trees over the guns; the tree bursts caused a shower of shell fragments on the open turret vehicles below. The platoon leader and several men were seriously wounded by these fragments; therefore, I ordered the guns to move back out of the position.

Simultaneously with the mortar attack, heavy artillery fire began to fall on the Troop D positions. From my position, I could observe this fire and believed it to be friendly artillery fire coming in from the northwest. This belief was confirmed in a few moments by the troop commander as he requested permission to abandon his position. I ordered Troop D to move out of the impact area but to remain in a position from which they could continue observing to the north, south, and east. This change was subsequently reported to squadron headquarters along with a request that steps be taken to lift the 1st Army artillery barrage.

A few minutes before 0900, Lieutenant Ellenson reported that his platoon could see troops moving across the high ground directly north on the opposite side of the river. As I turned my attention in that direction, I too could see dismounted men moving southeast across the high ground about 1500 yards away. Being quite certain that these men must be the 1st Army troops, I directed that a patrol be sent out to establish contact. The patrol was to proceed with due caution to avoid trouble, should the men we saw prove to be retreating Germans. There was also the probability that our own patrol might be mistaken for an enemy unit. However it was difficult to restrain the desire of all the men to dash out and establish the initial contact themselves.

As the patrol was dispatched, I also directed the tank company to make a determined effort to get into Houffalize. This they were to do by moving due east along the now cleared trail, thence to the high ground south of the objective, and into the town from the south. The mission of the tank company was not to capture Houffalize singlehanded, but rather to conduct a lightning harassing raid to determine in so far as possible the German strength in the town. Captain Mullins was told to move into the town, make a rapid tour of that portion south of the river, and then to withdraw to the high ground where Troop D was situated. From his position on the hill south of town, he then could assist Troop D in its overwatching mission and cut off any Germans being forced back by the CCA attack.

Company F had little difficulty getting across the open ground, receiving only small-arms and mortar fire as it advanced. There was no opposition to its move to the high ground because troops in the town had no good fields of fire. The tanks then moved into the town firing 37mm and machine guns, setting fire to buildings, flushing several Germans from houses, and then withdrawing to their previously designated positions.

I was observing all of this action but at the same time anxiously awaiting word from the contact patrol. From our positions, we could see more and more troops trudging through the snow on the far side of the river. Certainly these must be the long awaited 1st Army elements.

Events moved rapidly thereafter. The patrol returned a few minutes before 1000 to report that it had contacted elements of the 41st Armored Infantry, 2nd Armored Division. The juncture between the 1st and 3rd Armies had been established, thereby eliminating the Ardennes salient that the Germans had created in the Allied lines a month before. The mission assigned the 41st Cavalry Reconnaissance Squadron had been accomplished.

I immediately reported this initial contact to squadron headquarters and requested further instructions. In reply, I was notified that the squadron commander was en route to my position and that a platoon of Troop A had contacted patrols from the 334th Infantry Regiment and the 82nd Armored Reconnaissance Battalion (2nd Armored Division) farther west along the Ourthe at about the same time that we had contacted the 41st Armored Infantry. Seemingly, the two armies were now joining forces all along the river.

Upon arrival, Colonel Foy directed me to maintain my present position until CCA had reached Houffalize. He said that their attack was well underway and that I could expect them to reach the objective within two or three hours. The squadron commander then went with the contact patrol across the river to meet the 41st Armored Infantry commander for a comparison of future plans.

Upon his return from the personal liaison mission, Colonel Foy gave me an account of his discussion with the 41st Armored Infantry commander, reiterated his instructions as to my actions pending CCA's arrival, and then returned to the squadron command post, which was still in Bertogne.

For the remainder of the day, our mission was to keep Houffalize and its approaches under observation and to report the progress of CCA. The combat command was advancing steadily up the road from the southwest, being delayed by a scattered, retreating enemy using road blocks and mines to great effect. This CCA attack was coordinated with the advance of CCB and the 101st Airborne Division from the south. Shortly after 1300, elements of the 42nd Tank Battalion, CCA, reached their objective, the high ground south of and overlooking Houffalize—the position occupied by the light tanks and Troop D. Through the remaining daylight hours, the balance of CCA closed on the objective; the position was organized for defense; and close contact between units was established all along the line. Control of the Houffalize sector passed to CCA at 1600.

At 1630, the 41st Cavalry Reconnaissance Squadron task force withdrew to the squadron CP at Bonnerue, leaving an outpost on the trail west of Houffalize, and patrols along the south bank of the Ourthe River to maintain the contact with 1st Army units along the northern bank.

The impression made by this single operation on the officers and enlisted men involved was deep and effective. By forced application over a compact twenty-four hour period all personnel suddenly saw the need for and value of months of pre-combat training. Without Lieutenant Ellenson's keen ability to read a map under extreme pressure, the column certainly would have been led astray and might never have reached the objective. Throughout the action, teamwork between men and units; between tanks and dismounted men; and between assault guns and well-located forward observers was acutely apparent to all concerned. Likewise, no one could help but notice the distinct reliance placed on radio communication to achieve maximum coordination with a minimum of effort. In addition, there were many instances demonstrating the soundness of scouting and patrolling techniques; need for detailed prior planning; effective small unit leadership; and a variety of other basic elements of reconnaissance unit and individual training.

The contact mission as assigned the CG 11th Armored Division was, I believe, an ideal reconnaissance squadron undertaking. The requirements for the success of this type of assignment are: a high degree of mobility; maximum surprise; varied, effective firepower; flexible communications; and well-organized dismounted men. All of these necessary factors were present within the 41st Cavalry Reconnaissance Squadron. The specific mission possibly could have been accomplished by either tank or armored infantry units of the division as effectively, but not without a diversion of effort or a sacrifice of strength in the main attack. Moreover, the reconnaissance squadron, possessing the tools necessary to accomplish this mission, was readily available to the division commander.

The successful accomplishment of this special mission is another example of the capability of a reconnaissance squadron to execute any mission which it may reasonably be assigned. Because of the flexibility and versatility of this type organization, it forms an integral part of the support echelon of the armored division.

CARDED

THE OFFICER'S CODE

by COLONEL ROBERT W. STRONG

THERE has never been a time when Army officers—or any similar group, associated professionally—could not well afford to examine the question of personal ethics as applied within their group.

For many reasons, now is a particularly appropriate time for *all* Army officers to look into this subject which for too long has been neglected in the press of wartime and postwar duties. This is a good time for a coldly critical discussion of The Career Commissioned Officer's Code.

If these remarks, offered by one who is nearing statutory retirement age, seem unduly critical of our present Army and its officers, they are not meant to be. Certainly an officer whose active career is almost finished has no personal axe to grind.

No one person can state completely the principles by which an officer must shape his conduct, and no one person can make the final observation on what is right or what is wrong with our Army of today. But if frank discussion can be stimulated here, and carried on by others elsewhere, ultimate good may come of it.

What *is* this so-called Officer's Code? Neither the Articles of War, Army Regulations, nor other such sources seem to mention it, at least not in so many words. Let us not attempt a definition at this time, but rather, let us take up a few questions first—questions which arise in the minds of many older officers.

Are the standards of our present commissioned officers below those maintained by our prewar officers? If so, why?

Why do so many officers seem to be thinking more about what the service can or will do *for them* than about what they can do *for the service?*

Why do so many officers now seem to lack the old *personal devotion to duty*—that urge to give wholly unselfish service, no matter what the conditions or difficulties involved?

These are challenging questions indeed.

Lest we give offense to many fine young officers of today, we may pose some equally valid questions of an opposite nature:

Didn't World War II end in victory on the battlefield for our side?

Are not present day officers just as able and effective as those of prewar days?

Just what are these so-called standards that seem to be in question?

Why compare present officers with those of earlier days when these old days are inevitably gone, and those, now old, officers will soon be "turning in their suits?"

Speaking very generally, we might expect officers whose service extends back to the years before Pearl Harbor, to fall into one category, who might go along with the first set of questions above, and what they imply. Those who have been commissioned during and since our entry into World War II might be expected to counter with the second set of questions. On this arbitrary basis, then, let us examine our Army and its officers from the standpoint of conditions which prevailed before Pearl Harbor, as compared with circumstances since that time.

Colonel Robert W. Strong graduated from the United States Military Academy in 1915. During World War I, he helped organize the 77th Field Artillery, Fourth Division, and commanded its First Battalion until return from the army of occupation.

During World War II, he organized and trained 33d Armored Regiment. He was Chief of Staff of the Third Armored Division and the CG of the Cavalry Replacement Training Center. He also served as Chief of the United States Military Mission to Peru and Deputy Chief, Operations Group, P&O Division, WSGS.

At present he is assigned as PMS&T at New Mexico Institute, Roswell, New Mexico.

Let's look at the prewar period first. In all fairness and honesty, many of our present-day officers—especially the younger ones—could not be expected to know a great deal about the Service standards of that earlier period. But how far back before Pearl Harbor should we look? Ten years? Perhaps. But better still, let's consider our Army as it was some forty years ago—say about 1907.

Why go back to *that* dark age? Because it was about that time when the oldest officers, still on active duty, came into the service; because the long period from then to now spans the active life, the tireless effort, the experience, and the observations of a group of officers whose service to their country has encompassed not only combat in *two* world wars but also the many important and difficult peacetime problems encountered between those two wars, and before the first one.

Now occupying many of the very responsible spots in the Army, they are still working zealously and most effectively to help make our national defense setup what it must be. They have seen a lot; they have gained much valuable and varied experience; and they know that, despite all proper and necessary changes in weapons, tactics, conditions or times, there is one thing that must not be changed or tampered with—*the maintenance of the very highest possible code of honor and standards in all our commissioned officers.*

What was our Army like in that long-ago time when these men began their service?

In about the year 1907, the entire strength of the Army, which included a total of about 3,800 officers, was approximately 62,000. Of this, almost the entire bulk comprised field troop units of Infantry, Cavalry, Field Artillery, Seacoast Artillery, a very small Corps of Engineers, a handful of Medical Department personnel; and, in the War Department overhead in Washington, an Adjutant General of the Army, an Inspector General, a Surgeon General, a judge Advocate General, a Chief of Ordnance, and a

Quartermaster General.

But *where was* this Army which, in all, numbered about the strength of four present day divisions? And what did it do? In 1907, about half of it was scattered over the United States, much of it in old frontier posts, some of which in the west and southwest were 50 to 100 miles distant from the nearest railroad. But that wasn't all. The other half (about 30,000) was, just as now, performing important outpost, occupation, construction, pacification and a variety of other duties in many parts of the world—China, the Philippines, Puerto Rico, Cuba, Alaska, Panama, and Hawaii. Its fine accomplishments, in the face of many difficulties, discomforts, and privations unheard of today, occurred prior to the many modern advances in science, medicine, disease control, etc.

At these little garrisons, at home as well as overseas, the troop units not only had to keep up a proper state of training and discipline but also to do everything to keep themselves maintained. They really had to pull on *all* the oars. By the time Lieutenant John Doe had finished his apprenticeship as such, he had served in all the spots *now* occupied by Major John Gish, Finance Office; Major Joe Doakes, Q.M.C., Post Quartermaster; Major Jupiter Jones, C. E., Post Engineer; Captain Flash Gordon, S. C., Post Signal Officer; and so on through nearly all the other service and special staff duties. And in practically all cases, this lieutenant did all such maintenance, service and special assignments "in addition to his other duties." And he did not think he was abused; it was just part of the game.

In that period prior to World War I, of course Lieutenant John Doe did not know that a war was coming, and he was too busy to be bothered much by big words such as "mobilization planning," "industrial mobilization," "career management," etc., most of which had never yet been phrased. Little did he realize, as he daily gave his best to looking after his outfit and to all his other assignments and work, how thoroughly (and, fortunately) he was developing within himself real leadership, initiative, know-how, loyalty to the service, ability to head fearlessly into any assignment and overcome obstacles under his own steam—all of which was to be so valuable to his country a little later. But when it was clear that we would have to fight in *World War I,* faced with solution of the seemingly insurmountable obstacles and tasks that fell on our little corps of officers, Lieutenant John Doe and most of his fellow officers then realized how much their previous training had done for them.

And though most of them had never before "mobilized" much more than their own small commands for daily drill or monthly pay—had never been to Leavenworth to learn about mobilization, supplying, training, transporting, and commanding large units—yet that little corps of officers, a handful of whom were Leavenworth-trained and in key spots in the then existing general staff in Washington, were undismayed. They expanded the little 100,000-man army to the wartime peak of over 4,000,000 men who brought victory to us.

What made it possible for this small Army to rise successfully to the challenge of the first World War? *The greatest single factor was its corps of prewar officers.* These were men who knew the true meaning of the words *loyalty, devotion to duty,* and *unselfish service to their country—in peacetime,* as well as in the gruelling combat of World War I.

Let no one speak disparagingly of that pre-World War I regular army. Though small, it fully served the purpose for which our Congress authorized it. It was a good and effective Army. True, it had its faults; it was unbalanced in many ways; it had to live too much of an insular existence to be a real part of American community life; there was but little opportunity for the development of understanding—hardly of any acquaintance even—between the Army and the Navy (there was no Air Force then); and of course it had some officers who were below par—just as we have some today. But though it had these and other admitted faults, *there existed in that Army, within the hearts, minds, and souls of the great majority of its officers, some of the most vital qualities and attributes that a corps of commissioned officers could have—and must have.* Most of those officers truly felt and were daily actuated by:

/ A very real sense of *loyalty* and selfless devotion *to their country's service*—the service to which they had dedicated themselves without any reservation;—

A willingness and courage to assume full responsibility for their own acts and those of their subordinates, without any alibi-ing or "belly-aching;"—

The *intestinal fortitude to "call the shot" as they saw it*—to give an honest opinion without fear for their own skins;—

The *determination to carry out vigorously an order or decision of higher authority* even though they may not have been personally in full accord with it—including the ability and the will to insure compliance by their own subordinate men and officers *without covertly crabbing about, or trying to soften the order,* to those subordinates;—

A proper *respect for and observance* of the necessary customs, courtesies, dress and appearance, amenities, dignity, habits, and behavior expected of those in public service in any society anywhere, any time—on a military post, in any civilian community, or in any foreign country.

The *initiative* to make their own part of the chain of command function fully—and to do so because of their own interest and under their own steam;—

And finally, a *high sense of personal honor and integrity* about which there was no question or doubt.

These are some of the things included in that unwritten but well understood Code of the Commissioned Officer of those earlier days. Though it did not exist in print, this Code was as real as habit, and as strong as honorable tradition.

It *was* tradition. But because it was tradition in those old days, could it now by any stretch of the imagination be considered out of date—old mossback stuff, no longer necessary or deserving of a place in this new Army of today?

To any man worthy of his commission, it should be evident that the need still exists for carrying on this splendid tradition—this Officer's Code—which is the core of moral strength that binds an Army together.

The citizens of this country have the very definite right to expect, and they do expect, as a guarantee of our nation's sovereignty and safety, to be given the most effective and coordinated national defense structure that is humanly possible within the funds made available by our Congress. Our people have the further right to expect their entire national defense setup to be officered *only* by men who know what their commissions mean. So long as military forces are necessary in this country to guarantee its sovereignty and its existence, the fabric of its commissioned officer personnel must be *completely* unaffected by *any* selfish, or political, or ideological or other influence that would make them swerve from the straight path of their sworn duty. *In fact there is no other group of servants of our government from whom our country rightly may and should expect more.*

Has anything happened to our Army and its officers, to jeopardize this vital moral heritage it should so prize so highly? Is it more difficult in these days to maintain the standards of an earlier day?

In the first place, from Pearl Harbor to this very day, nothing, it seems, has been "normal" in our country or in the world. A four-year global war and four more years of postwar readjustment have left us still unsettled, unsure of the future. There is little in the present dizzy and strained international situation that is conducive to good old-fashioned sane living and thinking. The more civilized our world has become theoretically, the more uncivilized has it seemed to act. Time no longer "marches on"; it rushes at a pell-mell pace. Doubt and fear have crept into men's thinking everywhere. Small wonder, then, if our new and expanded postwar Army has been affected.

Our "new Army," with its "new look," was lately reborn during this hurry-up-to-get-there-first age, this era of fantastic technological and scientific development, this period of high pressure business competition and production. Could it therefore be possible that too many officers are beginning to think of the Armed Services as just another "big business?" Could it be that some think of themselves more as businessmen than as commissioned officers of the Armed Services? Or, that in accepting a commission, they think they have simply taken on another "job"? Big Business? Yes, in a sense, our national defense setup, under present world conditions, is a very big business, for its activities must be conducted in as economical and businesslike way as is possible.

But what is the *one* primary reason for its existence? Not to make money, but *to save human lives;* to make this country strong, secure, and respected enough so that war will not come to us; but if war must come, to win it —period! While we must train ourselves for the possible eventuality of war, let us not get the cart before the horse; we must help prevent war, as our first and highest duty, by making our defense structure so effective that no power will dare attack us.

How better could every commissioned officer of our entire National Military Establishment spend just a few minutes every day, than by thinking over these bald facts? Perhaps the word "code" would not sound stilted or preachy, after all. No, our defense establishment is not just a big business; nor is there any place in it for an officer who feels so, or feels that he has just another job. In his commission he holds a definite *trust* which permits no halfway, part-time or sloppy performance or attitude of *any* kind.

In this new Army with its new specialties and techniques, its countless new problems and its opportunities, all officers—especially younger ones —should give intelligent thought to the planning of their careers in order that they may continually widen their horizons, and qualify themselves for ever greater responsibilities. In this process of self-orientation and improvement which faces all these younger men, it is possible that one factor which is as old as mankind, may decide their ultimate usefulness and value to their country's service. We refer to none other than that intangible and intriguing thing called *ambition.*

One authority gives us these definitions of the word *ambition:*

1. Eager or inordinate desire of power or distinction for its own sake. (Selfish interest.)

2. Worthy eagerness to achieve something great and good. (Unselfish interest.)

No doubt each of us has known a number of ambitious men who seemed to be motivated primarily by one or the other of these two aims. Let's examine these two types of motivation a bit more closely.

The "inordinate desire" chap whose urge or virus is described in the first definition is of quite some interest; his species is subject to some variations; however, two types are the most distinct and predominant.

The first one is what we might call the "bulldozer" type, the 12-cylinder, driver-type leader who, no matter what, is entitled to great respect because he usually has courage; he seeks responsibility, gets things done, is not afraid of barking his own shins; often however he likes to "hear the 'crack' of his own whip"; and, being a high power extrovert, he is inclined to have that overweening, personal and selfish desire to pass everyone else, "to arrive," and to be singled out way above the common herd. He usually has real hair on his chest; his fuel tank is of the self-filling kind; and he needs no vitamins of any sort.

A second member of this "inordinate desire" group is a quite different type—though he gets there just the same. Usually quiet and calculating —definitely not a noise-maker or flag-waver—he might be called the "weather-man" type because, before arriving at any decision that might cause the slightest scar to be left on his hide, he wets the forefinger and cautiously holds it up to see which way the wind is blowing. Frequently, however, such caution should not be construed as weakness or lack of courage—he may be totally fearless, and even completely ruthless. Perhaps he is in some ways even more effective than the number one type. He too, will arrive, but he wants nothing to attract attention to, or delay, his progress.

Are these two types of chaps valuable to the world? Of course they are, providing they are engaged in worthwhile work. They are *doers.* Even though each one may appear super-aggressive, in his own way, it is far easier to slow down such runaway racers, at least to a gallop, than it is to put heart and spirit into born sluggards.

But, there is one thing to remember about such super-duper extreme cases. No doubt they do a little praying every night something like this: "O Powers that be, let me get there first, to the top spots. Award me the plums. Amen." Perhaps that is all right, too. *But it isn't all right if such a man's daily effort, decisions and acts are colored or adversely affected by thoughts of his own advancement or success, and especially when the pinches come.* Unless he is a completely honorable and sturdy character, he may not do the thing his conscience is trying to tell him to do. That is most assuredly a danger in ambition of the purely selfish type.

What of this other chap who has a "worthy eagerness to do something great and good?" Of course there are many of these in many walks of life. Such a man is usually modest, unselfish, is not concerned with getting his name on the front page, destroying his competition, or in racing past every one to the goal. If a professional man, he is quiet, industrious, wants to invent or improve something, or contribute worthy service to the world. If he lacks organizing ability and forceful leadership, he usually makes up for it by the brilliance and consecration of his efforts.

Now then, what does this little discourse on ambition have to do with commissioned officers, their standards and Code? Is it undesirable that they should have ambition? Far from it. The one important thing is that their ambition be the right kind and that it react on them in the proper way; that it spur them on to greater effectiveness and higher devotion to duty in the unselfish service of their country; that it *not* make them, little boy fashion, carry red apples to teacher; that it *not* make them simmer and stew about what assignment or promotion should come to them.

Of course, it is a worthy aim for all officers to aspire to merited advancement or promotion; it is the only tangible evidence that their worth to their country has increased, is recognized, and that they may assume greater responsibilities. But what a really pitiful—and at the same time ludicrous—sight it is to see a too-conscious-of-promotion sort of person diddling around, stewing in his own fat! Such a man is as transparent as rayon underwear.

"Inordinate," overweening ambition, which plans and thinks only about personal, selfish ends, is bad medicine. It is however no worse than —nor as deadening to the efficiency of any system or organization as —*lazy or smug complacency*. In the military services, what a dead weight such a type of commissioned officer usually is! Typical is the one who never does any more than that "ordered by the Old Man"—and then wonders why the Old Man lands on his neck once in a while for failing to see and do the things that need attention within his sphere of responsibility. Probably it is not just coincidence that he is often the same type who feels that his commissioned status is a god-given, free pass, from here on out—that he is "made for life—that he can rest on his laurels (he may have earned some, though usually he has not)—that he is really a "somebody" *just because* he wears insignia of commissioned rank. God pity such a chap.

Between these extremes of super-selfish ambition and of ineffectual complacency, there are of course thousands of effective officers of all ranks with proper ambition who are doing their unselfish level best, who really honor their commissions, have a worthy code, and are justly proud of it. May the likes of them never falter or weaken!

We have raised some serious questions that disturb some of the old-timers who have known the Army for many years, and who feel that the Officer's Code, passed down untarnished from those who preceded us, is the most priceless heritage we can leave behind when we in turn yield our places to younger men. We cannot go in peace or rest in the knowledge that we have done our full duty unless we have the assurance that officers of today recognize and honor this tradition of high integrity for what it means to them and their country in the long years ahead.

We know that in the vicious competition of today, in business and in some of the professions, such words as *standards, service, ethics,* and *honesty* seem almost to be forgotten at times. We see too many people today who are intent on getting-while-the-getting-is-good, regardless of consequences, and deplore the example this represents for our younger officers. We recognize that personal ambition for wealth, power, fame, or high position—in other words, *to arrive*—has become almost an epidemic disease.

We know also that many officers of today who have demonstrated the highest type of valor and skill as battle leaders have had little or no opportunities to learn of the broader, lifetime responsibilities, standards, and ideals of commissioned service. Because of the rapid demobilization and constant shrinkage of our Army since V-J Day, and the virtual wrecking of our splendid wartime combat units, many officers have lost the incentive to "look up and beyond." The period we have passed through in recent years, with all its attendant confusion, surely has made it difficult for any but officers of sturdy stock and strong character to ride an even keel. There have been many bad assignments of officers; many have been heavily overworked; most have had extremely difficult housing and family problems—usually magnified by the demands of the service.

But the same spirit of devotion to the service and to our country, which brought that small Army of 1907 successfully through World War I, and which brought another small but highly motivated Army of the late thirties through the trials of World War II victoriously, must still be the guiding principle for these officers of today. Today, as always, the moral strength of our officer corps is a measure of our country's strength to endure.

Perhaps the Officer's Code must remain unwritten. Certainly there has been no attempt here to spell out categorically and dogmatically a list of rules for all officers to adopt as their own. But we can summarize a few of the elements that go into the making of the Code. Here then, are some of the essentials:

1. *Character*—if he hasn't this, he has nothing.
2. *Initiative, leadership, ability* and *effectiveness*—the highest he can possibly attain.
3. *Devotion to duty*—unswerving, tireless, and unselfish.
4. *Personal honor and integrity*—of the highest type, that will not falter or fail in spite of hell and high water; and this includes an absolute, one thousand per cent honesty even in seemingly small things.
5. A *high sense of human understanding* and the ability to work intelligently with others; a thoroughly disciplined self, and the ability to command, control—to manage—others effectively and with wisdom; a keen

(Continued on page 54)

NEWS NOTES

Patton Museum Dedication

As the JOURNAL goes to press, Fort Knox, Ky., is preparing for the formal dedication on May 30 of the Patton Museum. Although many high-ranking military and civilian officials are expected to attend the dedication ceremony, the guest of honor will be the late general's wife, Mrs. George S. Patton, Jr.

The museum, housed in an old gunnery building near The Armored School, was opened to the public in March, 1947. It contains hundreds of World War I and II souvenirs. Many of them were personally selected by General Patton.

With emphasis placed on field artillery pieces, tanks and armored vehicles, the weapons display ranges from small Nazi daggers to a 20-ton 170mm German rifle. In the armored exhibit, vehicles from a small armored car to a 45-ton Mark V Panther tank may be seen.

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Armored Cavalry Promotions

The Army recently released details concerning implementation of the Armored Cavalry Career Field.

Introduction of the Combat Career Fields covering approximately 50 per cent of all Army enlisted personnel will result in thousands of promotions. Specific authorizations for the Infantry, Field Artillery and Armored Cavalry Career Fields are contained, respectively, in SR's 650-207-1, 650-206-1 and 650-202-1.

The Armored Cavalry Career Field will have five job progression ladders as follows: Amphibian Tank, Tank, Armored Reconnaissance, Armored Operations and Armored Intelligence.

The Armored Cavalry Career Field Introductory Special Regulations will contain an annex amending line by line the different tables of organization and equipment containing the Armored Cavalry Career Field positions to introduce the new military occupational specialties and new grades of the Armored Cavalry Career Field jobs. The regrading program has resulted in many revisions to the grades of the Armored Cavalry Career Field jobs. These new grades are amended into the applicable tables of organization and equipment by the annex to the special regulation introducing the Armored Cavalry Career Field. In general, the following are examples of the grade changes which will result for some positions in armored units:

Hq. and Hq. and Service Company, Medium Tank Battalion (T/O&E 17-26N)

	Formerly	*New Grade*
Reconnaissance Plt. Sgt.	2	1
Armored Plt. Sgt.	2	1
Chief of Ammunition Section	3	2
Assault Gun Section Chief	3	2
Reconnaissance Sqd. Leader	3	2
Tank Commander	3	2
Tank Gunner	5	3
Light Tank Cannoneer	6	5&4
Light Tank Driver	4	3
Medium Tank Driver	4	3
Bow Gunner	6	5&4

Heavy Tank Company (T/O&E 17-37N)

Tank Plt. Sgt.	2	1
Tank Commander	3	2
Gunner	5	3
Liaison Agent	5	4
Cannoneer	6	5&4
Tank Driver	5	3
Bow Gunner	6	5&4

Hq. and Hq. Company, Reconnaissance Battalion, Armored Cavalry Regiment (Light) (T/O&E 17-56)

Intelligence Sergeant	2	1
Tank Commander	3	2
Tank Gunner	5	3
Cannoneer	6	5&4
Tank Driver	4	3
Bow Gunner	6	5&4

Reconnaissance Company (T/O&E 17-57N)

Reconnaissance Plt. Sgt.	2	1
Reconnaissance Squad Leader	3	2
Light Tank Commander	3	2
Ass't Recon. Sqd. Ldr.	4	3
Light Tank Gunner	5	3
Liaison Agent	6&5	5&4
Light Tank Cannoneer	6	5&4
Light Tank Driver	4	3
Bow Gunner	6	5&4

Hq. Hq. and Service Company, Armored Infantry Battalion (T/O&E 7-26N)

Reconnaissance Plt. Sgt.	2	1
Reconnaissance Squad Leader	3	2
Light Tank Commander	3	2
Light Tank Gunner	5	3
Light Tank Cannoneer	6	5&4
Light Tank Driver	4	3
Bow Gunner	6	5&4

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Command Changes at Camp Hood

Sweeping changes in the top command echelons of the "Hell On Wheels" 2d Armored Division at Camp Hood involving four general officers will occur in the near future, it was announced at division headquarters.

Maj. Gen. Albert C. Smith, lately commanding general of the 24th Infantry Division, Kokura, Kyushu, Japan, has been assigned to the 2d Armored Division at Camp Hood, Texas, and will replace Maj. Gen. J. G. Christiansen. He is scheduled to arrive at Camp Hood on June 30, and General Christiansen is slated to leave in August for duty in Japan.

Brig. Gen. John H. Collier, commanding general of Combat Command "A" who has been with the division since its reorganization in 1941, will be transferred to the European theater in August.

Brig. Gen. Rupert E. Starr, General MacArthur's headquarters commandant in Tokyo since June 1946, who has been on the post in leave status for several weeks, will shortly assume command of Combat Command "B," now commanded by Col. George M. Collidge.

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Racial Relations Adviser Appointed Assistant to Secretary of Defense

Appointment of James C. Evans, racial relations adviser to the Secretary of the Army, as Civilian Assistant to the Secretary of Defense was announced recently by Secretary of Defense Louis Johnson.

Mr. Evans will work closely with the Personnel Policy Board of the National Military Establishment for uniform procedures and practices in the three military departments to assure equality of treatment and opportunity for all military personnel. He also will be available to advise with Army, Navy and Air Force officials on personnel problems peculiar to the individual departments.

In addition to his services in the Department of the Army, Mr. Evans has been acting as racial relations adviser to the Secretary of Defense since October 1947. He will bring with him to the Office of the Secretary of Defense Lt. Col. James H. Robinson, his Executive Officer.

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Army Gives Television Industrial Assignment

Television has been given an industrial job by the Army Ordnance Department, which is using special equipment in ammunition storage areas to keep close tabs on dangerous operations.

In announcing the development, Major General James Kirk, Chief of the Ordnance Field Service Division, said, "We see a tremendous potential for this Ordnance-developed television device in the manufacture of explosives, chemicals, aircraft engines, steel, and other products in hazardous fields."

This is the first time, however, according to the makers of the equipment, that television has been put to work industrially.

In 1943, at the recommendation of Ordnance Engineer C. V. Parker, an attempt was made to obtain a television device which would transmit by cable to a safe distance a close-up view of the disassembly operations. This search led to the selection of the Remington Rand Vericon Television System, which transmits its impulses over a coaxial cable. The camera, receiver, and power unit are portable and require no expert technicians to handle them. Generally, the image produced is clearer than that of commercial television because there is no static interference. Of particular importance to the Army is the fact that the equipment is relatively inexpensive.

The Vericon system is in use at seven ammunition disassembly plants of the Ordnance Department. Six more are under construction. Installation is fairly simple, the camera being mounted on a tripod or other mount on the danger side of the barricade and focused for a close-up of the work under way. It would be the only casualty in case of an explosion at that point.

For Como — A Knowledge of Radio Theory

by FIRST LIEUTENANT BOYCE R. MEERS

I HAVE heard it claimed by some communication officers that they need no knowledge of radio theory to perform their job. This may be true, but I am going to explain how a communication officer with a knowledge of radio theory can do a better job. Also, how in the near future a knowledge of theory will be a necessity. I do not mean that the communication officer must be a radio or electronic engineer, but it is necessary for him to have a working knowledge of radio theory.

As a commander, would you want a communication officer on your staff who didn't understand the technical functions as well as the tactical functions of the tools on which he is your advisor? To explain what I mean more fully, a soldier is taught the functions of the M-1 rifle as well as how to shoot it; this is done so he can care for the rifle and be more efficient in combat. Shouldn't this type of training also apply to the communication officer as a staff officer and supervisor of the unit's communication? Wouldn't he be a much more efficient staff officer if he were taught radio theory? He certainly would understand how to care for the unit's communication equipment.

More than ever before it is essential that the communication officer have a knowledge of radio theory. This is brought about by the constant development of electronic equipment and the increasing amount of it that is being issued for troop use. If we should go to war, the development of electronic and communication equipment no doubt would be speeded up and many new types of equipment would be made ready for troop use. Without a basic knowledge of radio theory, it will be almost impossible to control and properly supervise all the electronic equipment that will be found below division level in a future war. Suppose the communication officer has a basic knowledge of radio theory, and a new type of electronic or communication equipment is issued to his organization. He then should be able to understand the technical manual issued with it with very little study, and should be able to start a short training program for the operators and maintenance personnel at once. This would result in the equipment's being used and maintained properly. Moreover the equipment would be doing the job for which it was intended, with a minimum of delay.

What about the supervision of the radio repairmen? Can an officer tell a radio repairman from a screwdriver mechanic without a knowledge of radio theory? You can answer this question by watching a radio repairman repair a set. You will find that if you don't have some knowledge of theory, the operations performed by the repairman are not understood by you. How can a communication officer determine if his repairmen are performing their jobs properly? Some of these men may be sending sets to higher echelon maintenance shops that could have been very quickly repaired on the spot. This happens many times. Ask the people who operate the higher echelon maintenance shops.

With regard to the radio repairmen who have just finished a service school, there is a very important reason why we need communication officers who have a knowledge of radio theory. Most of the radio repair courses given in our service schools are very short when compared to what they should be to learn this technical subject. Therefore, if there isn't someone in the unit who can understand the need and type of training these men should have when they finish a radio school, the Army will more than likely lose a good potential radio maintenance man.

I do not intend to imply that the communication officer should go all out for radio maintenance and forget the other communication subjects. But this is true: no matter how well you know radio nets and procedure, if the radios are out of order or have been poorly aligned by poorly trained radio maintenance personnel, the communication will likewise be very poor.

A Microphone and Headset Tester

by WARRANT OFFICER CLARENCE W. COLEY

IN the Communication Department of The Armored School we have found that the microphones and headsets issued to the students need constant checking for serviceability. The supply room of the Radio Repair and Maintenance Division does this checking. To save time and effort, the tester described herein has been developed.

The microphone tester has two circuits—the modulation circuit and the control circuit. The principal parts of the microphone tester are two meters, two resistors, a 1.5-volt battery, and a microphone jack.

One meter is in the control circuit, and it has a D-C, 300-milliampere range. It is connected to the tip of the microphone jack, and is in series with a 5-ohm resistor, a 1.5-volt battery, and the sleeve of the microphone jack.

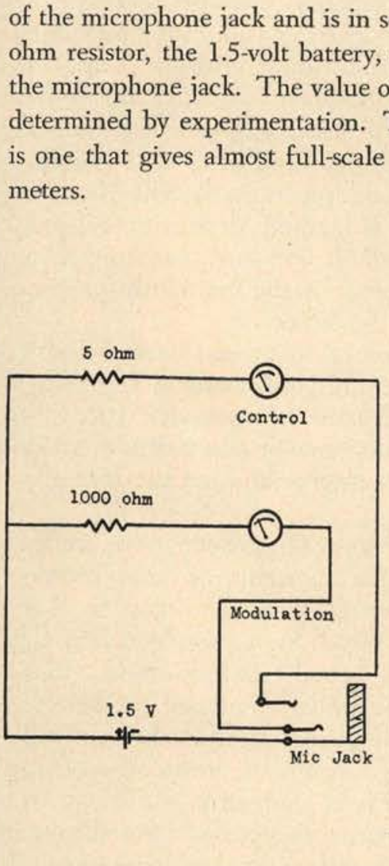
The other meter is in the modulation circuit and is a Weston Model 507. It is connected to the ring of the microphone jack and is in series with a 1000-ohm resistor, the 1.5-volt battery, and the sleeve of the microphone jack. The value of the resistors was determined by experimentation. The desired value is one that gives almost full-scale deflection on the meters.

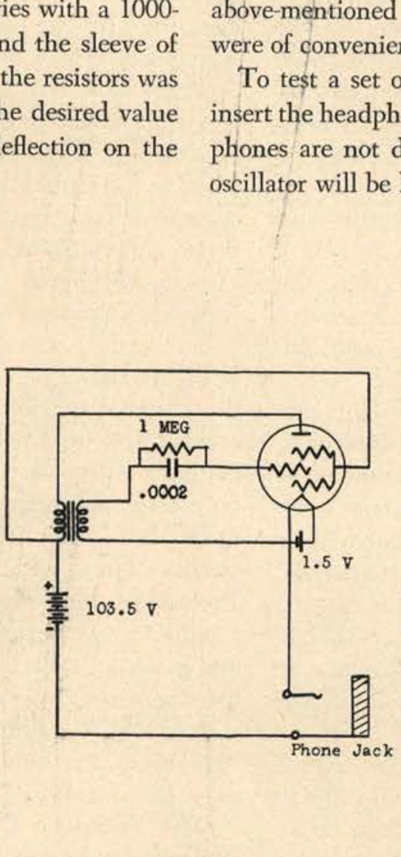
To test a microphone, insert the microphone plug into the jack, press the microphone plug into the jack, press the microphone button, and watch the meters. The control meter should read almost full scale, and the modulation meter should vary as you talk or whistle into the microphone. This test will indicate whether the microphone is good or not; it will also indicate whether the tester circuits are defective or not.

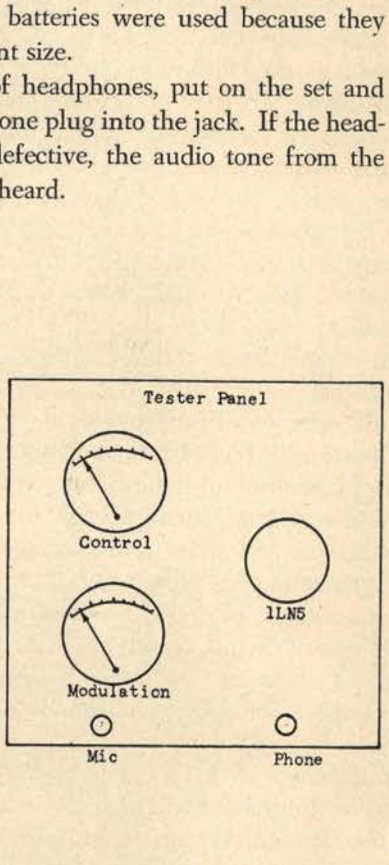
For testing headphones a 1-tube audio oscillator can be installed behind the panel. A switch is included in the phone jack; this switch completes the filament circuit of the oscillator tube when the phones are plugged in.

The audio oscillator uses a 1LN5 tube, a BA-23 filament battery, and a BA-38 battery for plate and screen voltages. Other types of batteries, or an A-C power supply of similar voltages can be used; the above-mentioned batteries were used because they were of convenient size.

To test a set of headphones, put on the set and insert the headphone plug into the jack. If the headphones are not defective, the audio tone from the oscillator will be heard.







THE ARMORED SCHOOL'S ENLISTED LEADERS PROGRAM

by SERGEANT FIRST CLASS PHILIP C. WHARTON
and SERGEANT FRANK G. MANGIN, JR.

IN fulfilling its mission of developing and teaching the tactics and techniques of Armored units, The Armored School is continuing to build its enviable reputation as a superior trainer of both commissioned and noncommissioned leaders. The Army today considers teamwork paramount, and it is universally recognized that one of the most vital of its team members is the NCO. Acknowledging this fact and realizing its mission, The Armored School has a number of courses for enlisted specialists and leaders. The courses which turn out both tactically and technically qualified combat unit noncoms are the Noncommissioned Officers Course and the recently revived Tank Commanders. These two, which represent the highest sort of enlisted training, are basically quite similar in scope and thus can be considered as one.

The high standard of instruction naturally presupposes certain qualifications in the personnel attending these courses. Perhaps first among the prerequisites is interest—sincere, well directed, and professional. Certainly our prospective leader should have a latent, if not actual, leadership potential. Lastly he should have demonstrated a marked ability to soldier in the highest sense of the word. To further amplify that "marked ability to soldier" it can be said that it means a noncommissioned officer who possesses cheerfulness in the carrying out of military duties, has an AGCT score of 90 or higher, and is the kind of a person who could eventually carry successfully the stripes of a first-three-grader. It is through these courses that the enlisted leaders perfect themselves in the performance of their duties and further their careers as noncommissioned officers.

Almost all Armored Force personnel are familiar with Fort Knox and The Armored School. However, a rather brief description of the School is in order, so that the nature of the surroundings of today's armored student can be more fully appreciated. The school is organized with a Commandant and an Assistant Commandant, plus the usual number of staff officers and assistants, all of whom make up the directing team. This team coordinates the instruction so that maximum and effective use can be made of the student's time.

When our potential leader arrives at Fort Knox, the first part of the School with which he will come in contact is the Student Battalion. He will then be assigned to one of the Student Companies. These organizations are responsible for the housing, feeding, supply, and general administration of the men and their affairs.

The primary academic groups which instruct the student are the Command and Staff Department, the Communication Department, the Weapons Department, the Automotive Department, and the Research and Evaluation Division of the Office of the Assistant Commandant. School Troops—a complete array of combined arms in armor: Tanks, Infantry, Artillery, Engineers, Reconnaissance, and Signal—provide personnel for Troop Requirements.

The course itself is on a very high plane and is perhaps the most comprehensive instruction ever presented to Army Noncommissioned Officers. Of four months duration, the classes are on an eight-hours-a-day basis.

The types of classes employed are the Lecture; the Conference, in which both the student and the instructor participate; the Demonstration, in which the School Troops are employed to present the actual battle drama; and the Practical Exercise. By way of illustrating the last type, let us consider for a moment a typical class—one on the assault crossing of a river. First the class has a conference, in which the principles are presented; then one of the excellent training and combat films is shown; and after that the class mounts into trucks, and proceeds to Salt River, to cross in assault boats. Presented, demonstrated, practiced, and critiqued, all in one busy and interesting afternoon. That is typical of the eminently practical methods employed at the School.

The variety of subjects at first seems overwhelming, but it makes a great deal of good common sense when the courses are interrelated to show that successful combat and field performance of one task is often dependent on mastery of another and, on the face of it, a different subject.

In the Communication Department the student studies Communication Systems, Communication Procedures and Security, Radio Communication, Wire Communication, and Visual Signaling, by conference and practical exercises. Actual communication systems are organized and used under simulated combat conditions. This emphasis on practical work is an indication of the School's complete awareness of the necessity for realistic field problems.

The Weapons Department courses train the tank commander in the characteristics and operations of tank guns and fire control equipment; fire commands;

The authors of this article recently completed the Noncommissioned Officers Course No. 1 at The Armored School.

The New Tank Commander Course

The course of instruction, described in the article, has been modified to more specifically meet the needs of the Armored Cavalry Noncommissioned officers. The course duration has been reduced from 17 weeks to 13 weeks.

The name of the course has been changed from Noncommissioned Officers Course to Tank Commanders Course. The course has been designed to prepare selected noncommissioned officers for tactical duties as tank commanders (MOS 1736 or 2736) within the Armored Cavalry Grades II and III.

In general, the scope of the new Tank Commanders course includes:

a. Leadership.
b. Tactics and techniques of small units in all types of operations; tactical training of the individual soldier.
c. Combined arms.
d. Techniques of fire, and firing of weapons peculiar to the Armored Cavalry.
e. Tank crew maintenance.
f. Air transportability.
g. Air-ground liaison and cooperation.
h. Signal communication.
i. Map and aerial photograph reading.
j. Methods of instruction.

adjustment of tank fire, subcaliber and service firing; and tank ammunition. Also included is the latest data on observed fire procedure—adjustment of indirect artillery fire, so that if necessary our NCO can call for and adjust intelligently the artillery that is available to support him. The vast majority of the Weapons Department time is devoted to good, sound range work—making the men at home in the fighting compartment of the tank, secure in the knowledge that they are masters of their weapons. Doing is learning—that is, guided doing—and a large percentage of time is spent in performance guided by eminently qualified personnel.

The Automotive Department initiates the learning soldier into the mysteries of automotive principles. The materials taught enable the student to learn his engine and vehicle. Electrical wiring, carburetion, lubrication, types of military engines, and power transmissions are studied through the generous use of training aids. Also included are thorough courses on Driver Selection and Training, Motor Pool Operation, Tank Driving, and Air and Rail Loading and Lashing techniques. The Automotive Department skillfully presents this material, and it enables the learner to understand the basic principles of vehicles and their application to the duties of a noncom.

The training aids employed in this and the other departments certainly deserve a series or two of volumes to completely describe them. They are complete, graphic and realistic, and are real aids—in fact, often teachers of a host of hitherto unfathomable subjects.

The department in which the Armored NCO spends most of his time is Command and Staff. Here he will be for almost half of his course. He will take up Tank and Infantry tactics from the individual soldier and vehicle up to and including the company. These classes are conducted via conference, sandtable exercises, and field problems. The need for complete cooperation and coordination among the components of the Tank-Infantry team is stressed, as is the excellent armored principle of careful deliberate planning followed by violent execution, and the means for accomplishing these ends. In connection with the Army's triphibious program, air transportability is included. This subject covers airborne operations and familiarization with cargo aircraft. The material presented is up-to-the-minute, as is the entire Noncommissioned Officers Course.

The logistics and organization of Tank, Infantry, Engineer, Reconnaissance, and Artillery units are thoroughly covered, so that the enlisted leader will know of the task force with which he works, and how its elements are kept moving. In Field Engineering, Map Reading and Photo Interpretation, Field Sketching, Bridge Classification, and Mines, Demolitions, and Booby Traps, the student becomes familiar with the vital role of a mastery of engineering subjects. The Intelligence and Security Division considers the characteristics and employment of reconnaissance units, and the general duties of a unit S-2.

In Personnel Management, the subjects of Company Administration, Personnel Records, Military Correspondence, and Military Law are taken up to qualify the student to understand and utilize the sometimes rather intricate channels of army administration. Also in this division the excellent leadership techniques and problems make up a valuable course. This subject alone makes the time and effort expended by the student in the entire course worth while. The nature of the responsibility of leadership is examined, so as to show the methods of fulfilling that responsibility. Successful leadership by noncommissioned officers in their relationship with the men they lead is the touchstone of success in combat, which is really the why and wherefore of training.

In the Research and Evaluation Division of the Office of the Assistant Commandant, our embryonic leader is taught how to teach—"How to tell 'em what he's going to tell 'em, tell 'em, and then tell 'em what he's told 'em." The art of putting across the vast amount of knowledge that today's Armored Cavalryman must know is one to be constantly cultivated, and in Instructor Techniques the student is familiarized with the methods that have proved successful. Utilizing conferences, the way to teach, the habits to be cultivated, and the mannerisms to be avoided, are presented. Each student presents a short lesson of ten to fifteen minutes and one of thirty to thirty-five minutes to his class. A lesson plan is submitted, and the entire presentation is critiqued by the students and the instructor. The benefits gained by actually presenting the lessons, and the post-lesson suggestion sessions, are invaluable and instill the student with confidence and knowledge of technique. Guided practice in instruction is the one sure way to become a good instructor; and since a noncom is a very real and active teacher of his men, the knowledge gained thereby is of great benefit in qualifying a man to make maximum use of his men's and his own time.

The students also run their own Troop Information Program, which further develops facility in speaking and instructional methods. Naturally there is Physical Training in individual and group athletics, which enables each man to participate in one or more activities with which he can keep himself in trim by learning sports that can be enjoyed in later years as well as in his younger days. A Guest Speaker Program is provided for, and there is ample time off so as to allow the student to arrange his personal affairs.

The students themselves are a very fitting tribute to the interest of noncommissioned officers of all the components of the National Military Defense Establishment. Men from the Regular Army, the National Guard, the Organized Reserve Corps, and allied and friendly nations make up this cosmopolitan group. Their sincere and gratifying enthusiasm for the school and its methods shows up in their classroom and field participation.

The fact that leadership can be practiced while in school is recognized by the School, and for that reason there has been established The Armored Cavalry Leadership Award, a fifty-dollar prize which is presented to the student who is selected to receive it upon graduation from the course. The winner is chosen by ballot, by his fellow students and members of the faculty. In choosing the Noncommissioned Officer who best demonstrates the qualities of Leadership, consideration is given to many qualities, among which are Knowledge, Decisiveness, Tact, Enthusiasm, Attitude, Initiative, Conduct, Dependability, and Capacity to assume and discharge responsibility. This award is a highly coveted one, for it represents the approval of both the man's fellow students and of the Faculty Board. This new Army of ours is a group of officers and men with a professional interest in their careers; and these men know that the part Noncommissioned Officers play is extremely important. From this School come hundreds of young leaders, eager and willing to shoulder whatever responsibility might be theirs. The Armored School superbly accomplishes its mission of giving them the knowledge necessary, and this is brought to life by their readiness to use it. With their confidence and know-how, these Noncommissioned Officers of the Army of the United States are stepping out smartly to forge a great, efficient, fighting force. They will need the best wishes and cooperation of all.

The Officer's Code

(Continued from page 48)

sense of the values and the appropriateness of both tolerance and intolerance.

6. *Sincerity*—complete, absolute; *modesty*—the type that becomes any man who holds responsible and public positions; and *courtesy*—in all things, at all times, to all people—and not just to those in higher positions.

7. *Respectable daily behavior and conduct*—the kind that is truly representative both of the highest type of American citizenship and of military standards anywhere, any time—at home or abroad.

8. *Appearance,* and *bearing*—soldierly and always creditable.

9. *Respect for, and adherence to, the proper social customs* and amenities accepted and practiced by cultured and responsible leaders of men the world over.

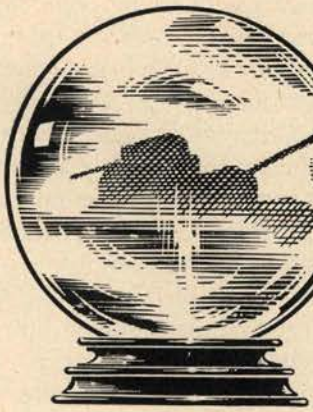
10. The *courage* to hew to the line —to face facts honestly and fearlessly —to carry out loyally and completely the proper orders, instructions or policy of higher authority—to refuse to ride on "band wagons"; to be properly frugal and watchful of public funds; the will to "stay with it," and to give generously of everything he has in him, no matter what or where the assignment—and never to pose as a martyr, even if he thinks he is one.

These principles, these requirements, may be and have been stated in many different ways. They do not necessarily include *all* the things an officer must live by. But if they strike at the heart of the matter, if they help to refresh the officers of today on their real and enduring duties—then our purpose is served.

Do the exacting requirements of an Army officer mean that he must be or act like a tin god? Not at all. But he *is* a public servant who has sworn to serve in an establishment that can not and must not fail his country, *no matter what happens.* He may or may not seem at times to be rewarded adequately for what he has done. His most permanent and satisfying reward is his own knowledge that he has done and given his best.

He possesses in his soul the things that make a man give and do the supreme things in battle. He is a *soldier.*

It is to men like him—and only his kind—that our people can turn with confidence and trust in times of danger.



THE CRYSTAL BALL

by LIEUTENANT COLONEL CAMDEN W. McCONNELL

MANY papers have been written to amplify the tank requirement; the intent here is to reduce the requirement to basic essentials. The problem of course is to obtain a weapon superior to the orthodox tank.

As a starting point, these premises are stated:

In theory, we can have a more powerful tank by making it bigger; in practice, there is an ultimate limit to size.

With a given size, engineering advances are leading to better tanks, but it appears that this trend is a victim of the law of diminishing returns.

There must, therefore, be an unconventional approach; all else is mere improvement.

An unconventional tank must necessarily violate conventional concepts.

To every revolutionary idea, there will be a logical refutation; the history of our technological advances is full of sound reasoning proving them impossible.

The causes of the impasse must be isolated and circumvented.

The role of the user is not to produce engineering ideas; he should state clearly the objective. He should isolate the causes of conventionality and evaluate them, thus paving the way for the scientist, the inventor, and the engineer to circumvent them.

Bold, reckless, even seemingly illogical decisions are necessary to pass the barrier of conventionality; these decisions must be made by the user, the engineer, and the controller of the purse strings.

The objective of the tank is to put mobile fire power on the battlefield; all other requirements are subsidiary conventions. Here is the field for evaluation and fruitful departure. The term "fire power" needs analysis. There are two basic requirements:

The tank must fight, in the conventional sense, and live on the battlefield. So long as battle involves a variety of weapons, employed over varied terrain by men capable of varied thinking, the fighting tank must have a variety of capabilities.

The second basic requirement is to defeat the enemy's tank. It would seem that the basic decision is to separate these two requirements and to solve them separately. To merge the solutions in one weapon is a luxury to be achieved only after the requirements are satisfactorily solved separately. For example, it is possible that some visionary weapon may be conceived which will prevent the operation of enemy equipment while permitting freedom of action to our own. It may not be a tank or a vehicle at all; it may not permit fitting to an orthodox tank. Because there are fewer subsidiary requirements, the initial effort to develop an unorthodox tank should be for the antitank role.

The subsidiary conventions should be analyzed:

An orthodox tank has a cannon, now some three centuries old, served by a crew of men, surrounded by a shell of armor, and mounted on a mobile gun platform. This tank is large because of the orthodox gun, the motive power and the crew. The orthodox land vehicle is capable of movement only along one of its axes. The weapon, however, must be capable of traverse away from this axis, either limited or all around. In the orthodox tank articulation is achieved by a turret ring, the diameter of which is dictated by the size of the inboard portion of the gun, the size of the round and the requirement that it be wrapped around the gun crew. This diameter influences the size of the entire tank.

The tank is heavy because of the size of the envelope of armor and the physical properties of the armor. There is sufficient scientific knowledge of the physical properties of matter to conclude that revolutionary improvement in protection per unit weight is remote. The future, therefore, seems to lie with reduction in relative size.

The engineer has proved himself capable of miniaturizing practically every device. The one irreducible factor is man. But he can be reduced in number. Man should be viewed as a mental unit. His other capabilities are better performed by machines.

The mental operations in a tank are (1) command; (2) driving, and (3) gun pointing. The interim ideal crew is, therefore, three men. Since target selection is a command function, if the mechanics of gun pointing can be reduced or eliminated, the crew can be reduced to two men. There are good arguments against a one-man crew: (1) The psychological angle—the experience of the fighter pilot in constant communication with an accompanying pilot would seem to refute this—and (2) It is not practical for a driver on land to perform other important combat duties. Therefore, the next step is a remotely controlled crewless tank. Since robot aircraft and television are in being, this solution is no longer visionary. It offers many advantages: (1) The frailties of man are set aside; (2) The protection of the human is unnecessary; (3) Control may be divided among personnel remote from the point of contact, and (4) The irreducible element has been eliminated. Manpower is needed for maintenance, but there is little logical reason why the maintenance crew should be present for the fire fight; it can be a separate unit, transported elsewhere. Radar and infrared may lead to night battle, hence continuous engagements; relays of crews may be necessary, thus providing personnel for maintenance. The provision of a crew to serve a cannon is archaic. Our national mechanical aptitude should be able to develop a machine which will fit in the working space required by man and can serve a piece. Mechanical loading is an elementary step. The automatic Coke dispenser proves that.

The quantity of rounds of ammunition required has been established for the fighting tank. For the tank destroying tank the number is a function of rounds per target x kills required. The user should be happy with twenty certain kills, all first round hits. The certainty of kill is all important.

Increase in power per unit weight is the engineer's problem. The user can concede performance and range, but it must be borne in mind that the trend of battle is to ever-increasing areas, distances, and speeds, and to decreasing densities. The fighting tank must have the capability of unpremeditated movement in support, assault and evasive action. The tank destroying tank moves deliberately over predetermined and reconnoitered routes. It can sacrifice speed and agility, but it must get to and move on the battlefield. Cruising range can be paid for gunpower; refueling on long marches is acceptable. A gun that can most surely kill deserves a tender.

Armor in a sense is an inverse function of gunpower. The gun which can most surely destroy the enemy's heavy tank at ranges beyond his effective range will command healthy respect. It will in most instances expose only its turret front to the enemy; armor can be concentrated on turret front primarily and secondarily on hull front. The remainder needs only artillery protection.

Surface area varies with shape. The shape providing greatest volume per unit area is a sphere; the most economical tank shape approaches a sphere; perhaps it should be a hemisphere.

The aspect most frequently presented to the enemy is center front; the least frequently is the rear. The distribution of aspects should be computable. From any given aspect, shots should be distributed over the projection of the area presented according to the theory of probable errors. The distribution due to the summation of the effects of orientation and probable error should be computable mathematically. Armor protection is a function of thickness and angle from normal. Some top mathematics laboratory should be able to compute the optimum shape and distribution giving the greatest protection and volume with minimum weight. It might be an egg, with the small end thickest and pointed forward.

The fighting tank requires a continued rapid rate of fire while moving. The tank destroying weapon is required to fire fewer rapid rounds, usually from a stationary platform. His first round can be deliberate but it must be deadly, followed by a quick change of target and a few more rapid rounds.

Gunpower is primary; all else is secondary. Several aspects contribute to gunpower: lethal effect of the projectile, control, rate of fire, etc. The user is interested in the effect at the target—he wants one kill per round. Whether effect is achieved by kinetic energy or otherwise is an engineering decision. High muzzle velocities reduce the requirement for accurate range determination; low velocities increase it. Balance is an engineering decision. The one aspect which concerns the user is the unpredictable action of the target during time of flight, which can be overcome by minimum time of flight or by a guided or homing missile. Tank and antitank fire is distinguished from artillery fire by direct laying, a convention which can be set aside, provided equivalent observation and control is retained. It is conceivable that the antitank weapon may be two units: a highly mobile control unit in the fire fight zone, and a fire unit launching a guided missile from defilade.

It is not the purpose of this paper to explore all engineering aspects. The engineer must violate conventional concepts, too. Some suggestions follow:

Biggest payoff will come with a radical new weapon. A little money and thought spent here may pay disproportionate dividends. Having little commercial counterpart, the field has probably not been explored to the extent of the automotive industry. Current improvements in propellants are laudable but do not in fact depart from the conventional gun. Liquid propellants offer definite possibilities for stowage and handling in the limited confines of the tank. Self-propelled projectiles, rocket or jet-assisted, will reduce the weight of gun but add to weight of stowage. Payoff may come when they can be guided to the target and can be launched from a piece not itself engaged in the tank battle. Our vast new knowledge of aerodynamics should be exploited to secure a projectile of better ballistic performance and to secure stabilization without rotation.

The electric drive has been tried; the particular model was rejected for combat, but the principle has not been proven unsound. The field of electric generation has not been fully explored. The conventional dynamo is designed for shaft speeds of conventional engines. The use of high-speed gas turbines may lead to higher dynamo speeds, higher frequencies, and higher voltages. A complete gas turbine installation including fuel supply, reduction gears, and heat exchangers is heavier than reciprocating engines. But the turbine is in its infancy; with a comparable state of development and coupled with electric drive, it should prove superior.

The offense often masses tanks for the attack in density and in depth at a point selected by himself. It is unlikely that the defense can counter this mass at this point with guns designed for point targets. A means is required for disrupting the formation so that it may be defeated in detail. Bombing is a logical solution but it must be assumed the enemy will have local air superiority. Heavy artillery and rocket missiles must have the most effective projectiles for dispersing armored formations by area fire. Incendiaries may be more effective than explosives. Means other than artillery and bombing must be sought for discouraging this mass.

A small pilotless aircraft of the target plane type may be launched from a mobile launcher, fly to the target area, be picked up with a radar beam from a control vehicle which guides it to the target. Final corrections may be made by a homing device, which would actuate a bomb release. The craft could be returned to its carrier, or be, itself, the missile.

There should be developed an antitank aircraft. If the air war must have reached a turning point before large-scale land offensives are practical, so must the tank battle have passed its turning point before large-scale advances are possible. After the air turning point is reached, some air formations should be diverted to antitank operations; they should have a suitable aircraft. World War II ground support aircraft were not specially fitted to attack tanks and were in fact not very effective.

To achieve an unorthodox tank, this paper has suggested many user concessions and departures from the orthodox. Also necessary are departures from conventional engineering practices. Admittedly, a tank is not useful unless producible. However, the inventor should not be limited by production restrictions. Let him first develop the unconventional pilot; production problems can be solved by compromise later.

Qualitative superiority, tank against tank, will not be enough in a future war; our tanks must be vastly superior, so that collectively they can defeat the enemy's masses. We must defeat him technologically, not by masses of men and machines. Costly research will be necessary and justifiable.

We have here lined out the playing field for the game of tanks. The scientist and the engineer can contribute the ideas; they must also crack the resisting line of conventionality, but the budget planner must pick up the ball and run with it, if we are to score.

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THEIR FINEST HOUR. By Winston Churchill. Houghton Mifflin Company. $6.00.

A Review By

Charles Collingwood

This is the story of one year—the year of 1940. Winston Churchill calls it "the most splendid, as it was the most deadly, year in our long . . . British story." It is a year whose drama and accomplishment is not sufficiently known in this country. The fact that it is known at all is due in no small measure to Winston Churchill himself who, in the days when he was making the history he now describes, dramatized and symbolized Britain's solitary struggle. It was Britain's and the world's good fortune that in Churchill a leader came to the fore who was not only a politician, a statesman, a strategist, but an historian, imbued with a sense of history and capable of assessing and interpreting the events in which he played such a decisive role. Because Churchill was this rare combination these volumes of his personal history of World War II are a unique and irreplaceable contribution. As long as men can read and think their conception of what happened in these years will be based in large measure on the

U. S. Army

Debris fills a London street as flames roar in a bomb crater at the height of a raid on London.

Mr. Charles Collingwood was born in Three Rivers, Minnesota. He attended high school in Washington, D. C., and took a pre-law course at Cornell University where he was graduated cum laude in 1939. He received a Rhodes Scholarship and a fellowship with the Students International Union, Switzerland.

In March 1941, Mr. Collingwood joined the Columbia Broadcasting System as a war correspondent. He accompanied the Allied Armies through Africa, France and Germany, from the beginning of the war to the German surrender at Rheims in 1945.

His current assignment is The White House correspondent for the Columbia Broadcasting Company, but as we go to press he is in Europe covering the termination of the Berlin blockade.

The New York Times

THE LONG WAIT: British and French troops at Dunkirk before they were picked up by rescue vessels.

picture that Churchill has painted.

The picture drawn in this second volume of Winston Churchill's history of the Second World War is a terrible and glorious one. It is the story of how the British people and Winston Churchill stubbornly and against all reason refused to accept the implications of the German victories and fought on, all alone, until, as 1940 ended, the aspect began to brighten. *Their Finest Hour* begins with the Fall of France and ends with the beginnings of Lend-Lease and Wavell's victory in the desert. In other words, it is the story of the darkest days of the war, and the brightest pages of British history.

It is written as one would expect it to be written, in the richest and most massive of Churchillian prose—a prose which from anyone else we would call old-fashioned, but which Churchill has made a part of our modern idiom. Take the opening sentence and listen to its spacious, rolling rhythms. "Now at last the slowly gathered, long-pent-up fury of the storm broke upon us. Four or five millions of men met each other in the first shock of the most merciless of all the wars of which record has been kept."

No one else in our time has written like this; if you like the feel of splendid words, they are here. And the story he tells is appropriate to the words . . .

There are many noble chapters in that story. To me the most thrilling and the most revealing is the story of Dunkirk. It was just about 9 years ago now—late May and early June of 1940—that the British Expeditionary Force was backed up into a contracting perimeter around Dunkirk. The fact that they were there was a sign of as crushing and staggering defeat as an army ever suffered. Their position, on any reasonable balance, was impossible. The British War Cabinet estimated that with luck, 45 thousand men could be brought off the beaches. But what happened was more than luck . . . it was a miracle. The seas, against the custom of the weather in this season, calmed. And out from the little ports of England came a motley variety of craft—excursion steamers, motorboats, mine sweepers, yachts, anything that would sail. They stood in as close as they could to the beaches and the long lines of men waded out from the fires and wreckage and climbed aboard . . . In the end they took off 338 thousand men from the beaches of Dunkirk. This became for the British the spur and the promise of the victory they finally attained. It

The New York Times

AIRCRAFT PLOTTERS: At work in a group control station at Uxbridge.

The New York Times

BOMBS: R.A.F. plane dropping destruction on Germany.

was after Dunkirk, and in the grip of its emotion, that Churchill made his famous "We shall fight on the beaches" speech.

The story of Dunkirk and of the events which followed it in the year of 1940 is told in close detail, plentifully illustrated with documents, dispatches and conversations. Churchill had a rule of administration that everything must be put in writing. He tells how as soon as he woke up about 8 A.M. he started dictating "a continuous flow of minutes and directives." All these were saved and they are the documentation of this history.

Their Finest Hour is the story of the war in 1940. It is also the story of Winston Churchill, this stormy, magnificent, controversial figure who, whatever you may think about what he stood for, must remain one of the really great human beings of our time. Mr. Churchill is not a modest man—modesty would seem somehow out of place in him—and he does not mind lingering on his triumphs and successful strokes. There is no question but that Winston Churchill is the hero of this book, as he was the hero of that time.

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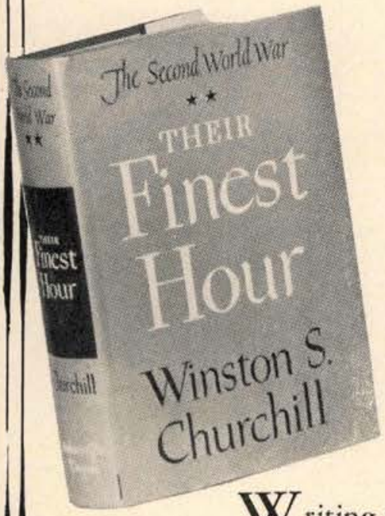

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#2

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THE FIELD FORCES TEAM

U. S. Army (from Official German sources)

AND THE BLITZ WAS BORN!

Just ten years ago the Nazi High Command planned the Invasion of Poland. With its execution, armor came into its own. ***(See page 2)***

JULY-AUGUST, 1949

VOL. LVIII NO. 4

RECONNOITERING

The Circulation Department

ON the 25th day of the odd months of the year, one of our most important operations gets underway. On those days, our printer unloads upon the Richmond (Virginia) Branch of the United States Post Office the task of delivering the Armored Cavalry Journal to its many subscribers around the world.

The clerks handling second-class mail at the Richmond Post Office must go through quite a variety of distributional detail before the final copy of each issue is on its way. Copies of The Journal will course out through the veins of the foreign and domestic postal systems.

For instance, The Journal will be in the bags of carriers in each of the 48 states. Still within the confines of the domestic mail system, a great number more will exit the Zone of the Interior via the outlets of the five Army Post Offices (APOs)—New York, San Francisco, Seattle, Miami and New Orleans.

Also within this channel are the bulk shipments that go to stock the newsstands supplied by Stars and Stripes distribution in the European Theater—from Trieste to Bremerhaven—and by Post Exchange distribution in the far-flung Pacific Theater. There is a bulk lot to the Mail Room at The Pentagon, destined for courier pouches that will be opened by our military attachés around the world, who want to keep abreast of the latest dope in our field. And there is a bulk shipment for the Service Newsstand on the Pentagon Concourse for over-the-counter sale, along with additional lots for the Book Departments of various posts and stations, such as Riley, Knox, Fort Sam. . . .

HERE in our Nation's Capital, the Embassies, Attachés and Missions of most nations take The Journal. Through the foreign mail system, The Journal goes out to 51 countries over the world, to such sources as state libraries, military staff headquarters, and our opposite numbers—members of the cavalry branch of the armies of other nations.

Our files also show a wide interest in our journal from a variety of sources. Our familiar cover holds forth in five libraries in Russia, in the cities of Moscow and Leningrad. One of our subscribers in China adds a goodly sum ($25) to his yearly subscription fee in order to receive his six copies by air mail. We have a feeling that he derives more benefit from the Armored Cavalry Journal than does one of our subscribers here in the States, whose address has changed so frequently and has jumped to such a significant series of destinations, that we suspect he follows the races. We commend the latter, however, for faithful reporting of his change of address. For as each issue goes on its way we are assured of a certain number of returns, along with a certain amount of cussing-out of the Circulation Department. Much of this kickback of undelivered copies is due to a failure to notify us of a change prior to the 15th day of the month of publication. Other returns, of course, are unavoidable. Here in the home office we are able to follow the progress of China's Civil War merely by noting the addresses of returned, undeliverable copies from that unfortunate country.

THESE are a few of many interesting vignettes on the circulation picture, but they by no means constitute the real story. That lies with the purpose behind our existence—to give the members of our branch a professional journal.

Our big lump of subscriptions goes to branch members, and that's where we want them. One subscription from Lieutenant Jones, Cavalry, is worth more to us than a dozen to a foreign library. The day when all officers of all components—as well as all units—in our field of activity appear on our rolls will be the day of great satisfaction to us. That day is still a long way off.

Not long ago the circulation picture was black. Things were at a low ebb. Circulatorily speaking, we were afflicted with low blood pressure, hardening of the arteries, or what have you. For example we had to depend on subscriber Bill Culver out Salt Lake City way to hold up the 48-State record as the lone Utah tie.

A CHANGE in personnel, policy, promotion and the actual quality of our product has brought about a complete revitalization. The story on promotion is one which we'll bring you in a later column. At the moment, it is enough to say that circulation of The Journal has been doubled in approximately ten months' time.

We like to think that the product we're sending your way is worth a talking up on your part. If each of you secures one subscriber for the rolls, we'll assume a circulation that will put us in the high blood pressure area—not actually an affliction in this kind of activity. Give us that one additional subscription and we'll give you a magazine that will knock your eye out.

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Just ten years ago the German Panzer units were poised to lash out at enemies to the East and to the West in a new kind of warfare—*the Blitzkreig!* Was it the quality and quantity of German Armor that produced such phenomenal results—or was it something in the German soldier? Are we placing too much emphasis on the materialistic today? Here is a study of the German Armor picture which holds a lesson, and complements the Story of Soviet Armor currently publishing in The Journal as a staggered series. In two parts by the same author.

PART I:

CARDED

Introduction to GERMAN ARMOR

by GARRETT UNDERHILL

FROM the briefest reading of postwar statistics on German armor, it would appear that Hitler's early blitz successes were won by a kind of black magic. Certainly all available information proves that it was not masses of planes and panzers which won Hitler his great blitz victories of 1939-1940-1941.

History has now firmly established that the German Army of those days was not highly mechanized. Never was the proportion of panzer to infantry divisions greater than one to ten. What panzer divisions there were, were shockingly weak in tanks as compared to their opponents. General Guderian has told us how the T/O tank strength of the Germans was under 2,800 when the West was blitzed in 1940. The French alone had over 3,600 tanks—practically all of which outclassed in armor and gun-power their German opposite numbers. Counting tanks in storage, the Germans at the time had under 4,000 tanks in all. Production in that critical month of May 1940, was but 116 tanks and 10 assault guns. (The Germans had built only 51 tanks the previous September.)

The situation in Russia during the summer months of 1941 was similar. The Germans were not only vastly outnumbered; here their panzers were up against some very fine tanks, and some excellent antitank artillery. The 2,000 German mediums were completely outclassed in gun power and armor—as well as greatly outnumbered—by the Russians' 31-ton T-34 mediums and 48-ton KV heavies. But just as the Germans lost but 300 tanks cleaning up 4,500 Allied tanks in the 1940 West blitz, so in inflicting on Stalin a loss of about 17,500 tanks, the Germans up through September 1941, lost but 500 tanks.

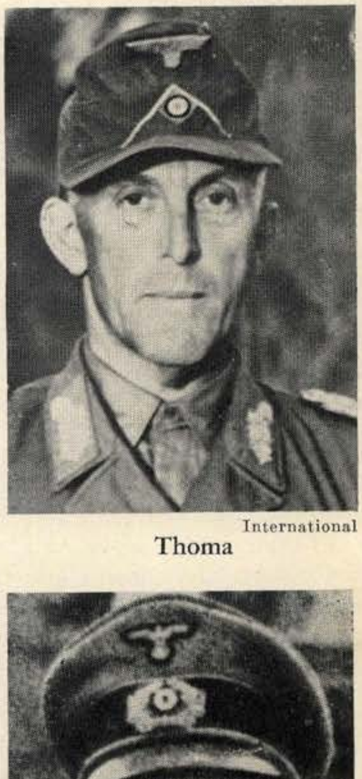
It would appear that Americans were completely fooled by appearances; that, from having neglected armor, the American military, the political leaders, and the public all drew quite false conclusions from early German successes. Considering that America is a materialistic nation—given to defining the American way in terms of cars and iceboxes, no doubt this error was a natural one for us all to make.

Thus it was that, when General Eisenhower smashed into Germany in 1944-1945, he had 25 armored divisions among his 91 Allied and American divisions. The Germans then had no more than 33 panzer divisions among their more than 300 divisions of all types. Thus it was that President Roosevelt in January 1942, announced a Victory Program to produce 75,000 tanks in 1943. The next September, the Adolph Hitler Panzer program—before being cut down—looked to the production of 9,600 tanks in 1944.

GERMAN BLITZ COMMANDERS

Associated Press

Guderian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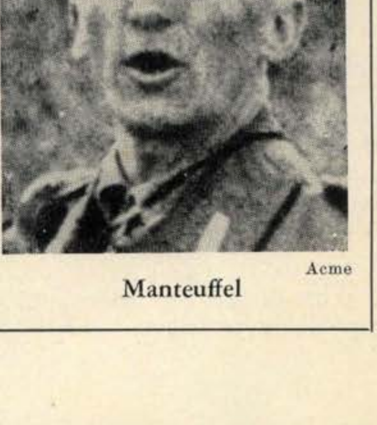
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This year ex-President Hoover's Commission reported that our Army couldn't account for 10,500 of the tanks it should have had on VJ Day. If the Hoover Commission is right, then a materalistic, weapons-prodigal program caused the US Army and Marines to "mislay" over twice the number of tanks the Germans used to clean up Poland, Norway, Holland, Belgium, Denmark, France, Yugoslavia, Greece, the British in Libya, and to rout and wreck over 176 of Stalin's regular divisions.

Moral Over Material

What careful postwar investigation has established about German armor does honor to the memory of our wartime Ground Forces chief, the late Lieutenant General Lesley J. McNair. This great general from the start emphasized the need for spirit and training, and emphasis upon the arms of close combat. It is clear from even the most cursory study of early German successes—and from later defensive fighting—that Napoleon, Clausewitz and all the myriad other authorities since Polybius are right in what they said about the relation of the moral to the material. To Americans, who would seem to be thinking too much in terms of matériel—in terms of atom bombs and giant bombers, of schnorkel fast underwater subs, of air-transportable robot ground weapons—a thorough study of German armor in the war might have the same effect as sticking one's head in a bucket of cold water.

For it is immediately apparent from a study of the prime German ground shock weapon that Hitler didn't win material superiority, either quantitatively or qualitatively. The conservative German military leaders rightly stressed spirit, training, tactics, and technique. The Nazi Party was shoulder to shoulder with the military in the effort to lay that cornerstone of military might—the spirit without which man cannot fight. The German soldier and tanker and flier was Hitler's real secret weapon. The black magic of his early success lay not in Mark IV tanks and Stukas, but in how to get the most out of the fighting man.

To an America undoubtedly over-impressed with its role as the Arsenal of Democracy, the over-all lessons to be learned from a study of German armor are nation-wide as well as of military importance. But it is up to the military to get their teeth into the subject, so that they may have the knowledge to tell the taxpayers how wrong we all were about German mechanized might—so that American regard for matériel may be reduced to fitting proportions.

There is not much point in studying German Armor in order to see how new ideas originate. The basic concepts were borrowed from Britain's Fuller and Martel, France's de Gaulle, and from visits to America—where Germans came into contact with pioneers like the late General Adna Chaffee, who may rightly be said to have worked himself to death creating the US Armored Force. But the study of German armor does give an excellent idea of the need to study foreign military publications, both official and private. It demonstrates conclusively that the most outstanding military ideas seldom originate in studies stamped SECRET; that, like as not, they appear first in the military press.

U. S. Army (From Official German Sources)

German military leaders stressed spirit, training, tactics and techniques.

What promises to make the study of German armor particularly profitable is the exceptional amount of experience the Germans had with this class of armament. During the last war, Germany fought great land campaigns for nearly five years. She fought alongside some seven satellite armies, against the armies of 13 allied nations—including the Brazilian. German ground forces fought from desert wastes to the Arctic tundra; in swamp and forest; on treeless steppe, in bottomless mud, and on Alpine heights.

The German Army repeatedly experienced a type of situation which the US has not experienced since 1898. That is the engagement of an "unblooded" army in the opening stages of a new war.

The Eastern Front

Probably most worthy of close examination by the West are the vast campaigns on the Eastern Front. There the Germans fought their main war. There they concentrated their main ground effort and strength. The degree of priority assigned the East may be inferred from the 1945 disposition of Panzer divisions following the return of the Bulge Panzers to the East. Then the Germans had one armored division in Italy, 6 in the West—and approximately 24 in the East.

Naturally many Germans consider that this war in the East was far more important than the African adventures—so well publicized in Britain and America—of Rommel's 60th Light and 15th and 21st Panzer Divisions. These German authorities maintain that, if Rommel could call the Egyptian Western Desert a tactician's paradise, then the vast reaches of Russia—stretching for hundreds of miles, from the Baltic and Arctic to the Black Sea, without terrain obstacles on which to anchor a flank—are a strategist's paradise.

In Russia whole armies and army groups were swallowed up in the plains and forests. Between concentrations long spaces were covered by the lightest of patrols. Hence, mobility was at a premium, and mobility seems to have been a factor of armor and motorization.

(Perhaps it is no coincidence that German power ebbed as shortages began to be felt in armored vehicles and motor transport late in 1941; that the Russian tide swept back with increasing force as more and more armor poured out of Urals plants, and more and more trucks arrived from America.)

Certainly German armor in North Africa and Italy was in very poor shape. Because of the special conditions affecting German forces in those theaters, it was usually used in a manner entirely contrary to war-proven German tactical doctrine. Similarly, after the Normandy landing, acute fuel shortages, lack of vehicles, and poorly trained replacements caused German tankers to honor the book more in the breach than in the observance. And in spite of shouts and screams and gnashing of teeth on the part of higher commanders, small unit commanders insisted upon commiting the cardinal German armored sin of committing armor piecemeal, in what was regarded as piddling operations. An understandably human desire for local security overcame school-instilled appreciation of offensive action—and of what the Germans called "the heavy mobile punch."

Moreover, by-the-book employment of German armor then was rendered almost out of the question by Allied artillery and air superiority.

There are those who consider this undoubtedly decisive effect of Allied action possibly an isolated case in warfare, for the Normandy landing was preceding by a four-year all-out US air and armament build-up. This school holds such a build-up to be most unlikely prior to the initial outbreak of a war. It maintains that the critical ground campaigns of another conflict might be fought with tactical air power values more closely approximating the 1940-41 campaigns. If economic considerations are going to force concentration of US air matériel and training efforts in strategic directions, Western ground forces could conceivably be compelled to advance—like Rommel —in spite of hostile local tactical air command.

History and Tradition

But it is important not to think of the German armored force without taking into account its background of German military traditions and history. The military character of the nation—fostered in the century since Frederick the Great—had its effect in every phase of armor development. Most important, it helped the rank and file to avoid overemphasizing matériel, and to appreciate the value of individual and unit training—and fighting spirit. Compared to the tasks of American commanders, the work of the German General Pattons was relatively simple.

It is equally important to avoid judging German armor development in US terms. In eight years of peace and nearly five of war, the Germans worked out many tactcial and technical concepts which do not necessarily bear direct comparison with contemporary developments elsewhere. As in all armies, developments at a given time were much conditioned by what had gone before. The Germans could no more free themselves mentally or materially from the past than anyone else. And then there were the industrial, political, and inter- and intra-service factors.

Terminology

Terminology is important. A German vehicle cannot be allocated its proper niche by its apparent similarity to a US one. Literal translations are treacherous. Efforts to fit German types into US terminology may have worse results. For instance, the term "SP gun" has repeatedly been used in US military literature to cover at least 6 genuses, 8 species, and a round dozen sub-species of German armored vehicles—though each type of vehicle has its own tactical doctrine and primary mission. A specific instance is the definition of "tank." The US definition of tank—a vehicle completely armored in, with gun for combat—would cover what the Germans call assault guns and tank destroyers, as well as tanks.

The main terminology trouble seems to derive from the US custom of not giving the primary tactical mission of an armored weapon in the basic designation. It would appear that US Army Ordnance prefers to regard the chassis and the gun of a given armored vehicle as separate and distinct entities. Thus TM 9-2800 (STANDARD MILITARY MOTOR VEHICLES) will give its reader all the characteristics of a tank or tank destroyer (SP)—except the characteristics of its armament. For these he must refer to TM 9-2300, which covers all artillery, from infantry AT to 16in. coast guns.

Perhaps it is only natural to treat chassis and gun as separate items, and not as an entity created to fulfill a special tactical function. At least, it seems natural in a nation that appears to have taken greater pride in its role as the Arsenal of Democracy, than in the miraculous work of its ground forces in turning an un-military, air-conscious people into one of the finest armies in history.

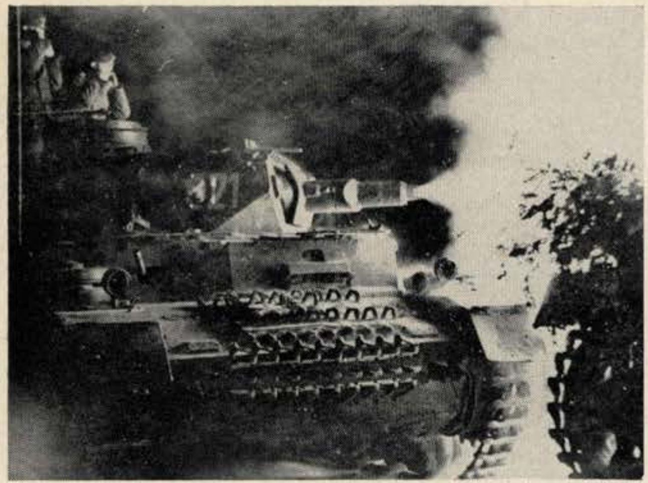
Thus the basic designation "Motor Carriage," plus ordnance designation of gun (which also gives no idea of function), has been used to cover all armored and "soft" self-propelled weapons except tanks. It does for tank destroyers, assault guns, AA, and armored artillery. Moreover, in Armored Force FM's there has been considerable inconsistency of designation. When FM 17-25 first appeared, it played quite a number of variations on the theme of assault gun designations.

Concern about designations is not to be sniffed at as comma-chasing. Military forces which do not watch their language are likely to get in the jam in which the Turkish Army found itself in 1943. Uncoordinated new terminology had been introduced in such a flood that two officers could read the same book and gain quite different impressions therefrom.

The amount of material available on German armor is vast. It will grow in volume as the Germans put their ex-

U. S. Army (From Official German Sources)

The military character of the German nation had its effect in every phase of Armor development.



U. S. Army (MID)

Pz. Kpfw. IV. Terminology is important.

periences on paper. If any given part of this material is to be examined with the most profit—especially if the point of view of an individual German is concerned—it is wise to have some idea of the names and numbers of the inanimate players, to have an over-all idea of the tools with which the German panzer people worked.

Tanks

The Germans began with the tank. To the post-World War I Germans, a "tank" was a turreted, tracked combat vehicle, armored all over. Tanks were primarily the armament of the armored regiment of the armored division. The German designation was *Panzer-kampfwagen*, followed by a Roman numeral. The word "tank," though commonly used, was verbotten because it reminded the Nazis of un-pleasant British World War I achievements. The original abbreviation was *Pz.Kw.*—which during the war was changed to *Pz.Kpfw.*, to avoid confusion with the *P.Kw.'s* Personenkraftwagen, which were personnel-carrying vehicles.

In 1942-43 *"suggestiv namen"* were applied to tanks and armor in general. For propaganda effect, they were not to be used in official correspondence. In general "cats" were tanks and tank destroyers, and "insects" armored artillery. As with older designations, the new might add a letter to show a modified version (i.e., *Panther Ausführung "A"*).

For record keeping, German ordnance gave all motor vehicles a *Sonderkraftfahrtzeug* (special motor vehicle) number. Thus *Sd.Kfz. 141* covered the *Pz. Kpfw. III Ausf. A-D & F-H, 141/2* the *Panzerbefehlswagen III* (armored CP), and so on.

The Big Four

The first standard post-World War I German "tank" was the Krupp light tank started in 1928, and produced beginning in 1931. A two-man job with light armor (proof only against small-arms fire) and two 7.9mm machine guns in the turret, this type of small tank was selected for production in large quantities—in preference to making small numbers of larger tanks. Production ceased before the outbreak of war in 1939.

The original cover designation of the Krupp model was LAS-I (*Landwirtsschaftlicher Schlepper*, or farm tractor). Its service designation was *Pz. Kw. I (Sd. Kfz. 101)*.

By the time the first armored division was organized in 1935, the suspension mechanism of the Krupp model had proved unsatisfactory. The Henschel model, started in 1933, and coming off the production lines in 1935, became the *Pz. Kw. IB*, but the Krupp A remained the principal I version. By then the planned weight of about 5½ tons had risen to 6-6½ tons. A later but rare C model weighed nearly 9 tons, had one- to two-inch armor, instead of the previous 13/15 inch. A *Panzerbefehlswagen I* had no turret. The I's saw service in Spain.

Also started in 1933 was the MAN-designed light 3-man *Pz.Kw. II (Sd.Kfz. 121)*, which had LAS-2 for a cover name. Originally a 9-ton tank, its turret mounted an adapted 20mm AA machine cannon (*2 cm. Kw. K30*) and the tank version of the infantry LMG—7.9mm *M.G. 34*. Theoretically it had about the same speed—25 mph—as the I's, but wartime models made good a road speed of about 15 mph. Armor was roughly twice as thick as the I's.

These two weakly armed, fairly thin-skinned tanks constituted the great bulk of German armor during the halcyon blitz days of the Polish, Flanders, and French campaigns.

In 1938 Krupp put into production the famous *Pz. Kw. IV (Sd. Kfz. 161)*. While the light tanks had infantry automatic weapons armament, this and the III medium had infantry support weapons modified for tank mounting. A 5-man tank, it originally tipped the scales at 19 tons, and was supposed to be as fast as the lights. Originally hull armor was as thin as 14.5mm inches but tanks built for the 1940 blitz had light 30mm or 20mm plates. They were thus hardly better armored than contemporaneous US light tanks. Armor was improved after the 1940 campaign, and again after 1941. In the IV G the weight went to around 26 tons, and the armor to over two inches.

Although the popular press made much of the IV's 75 when the tank appeared in Africa under Rommel, this short weapon was not intended—as many thought—to combat other armored vehicles. Some idea of its mission may be gained from learning that its *7.5cm Kw.K(L/24)* (meaning a 75mm *Kampfwagenkanone* 24 calibers long) was an adaptation of the light infantry cannon. But the IV was not an infantry accompanying tank; mounting the gun in a turret permitted it to take under fire targets of opportunity such as it might encounter in mobile warfare. It was a support tank, designed originally to fill the same role for lighter tanks, as the infantry regiment's 75mm howitzers did for heavy infantry weapons. Until 1941 very few were built; Krupp turned out only 240 IV's in the great blitz year of 1940.

In the Spring of 1942, the IV F appeared with a high-velocity 75. The Germans realized that their earlier designations had smugly failed to anticipate the gun power contest, so they named this new weapon—well-suited to combatting armor—the *7.5 cm Kw.K. 40* [for 1940 (*L/43*)]. The date bespeaks when the Germans learned their lesson. Later, the length went to 48 calibers in the IV H. These improved IV's were the principal German tanks during the years US troops fought the Germans.

Till the IV F's and G's came out, the principal tank best fitted for fighting armor was the *Pz.Kw. III (Sd.*

Kfz. 141). This medium tank went into production about the same time as the IV. It weighed in originally at about 16 tons (later to reach 26½ in the L & M) with a five-man crew. With somewhat better armor than the IV, it turned out to be considerably faster than the standard 25mph target. Even the heavily laden later versions could make 22 mph.

The original armament of an adapted 37mm anti-tank gun was found inadequate in the first campaigns. Tanks built late in 1940 had a short 50mm gun [*5 cm Ku.K. 38 (L/42)*]. These joined the older III's in the 1941 Balkan and African campaigns. It was this 50mm III which was the prime tank-vs-tank fighter of the early Rommel period. By then, the IV's had hollow charge (HEAT) rounds, but their low-velocity guns were not as efficient as the III's 50's. The III was the principal German medium tank—qualitatively and quantitatively—in the 1939-1941 period. Like the IV, it was originally intended to be a support tank for the I's and II's. Just as the IV had the equivalent of the infantry regiment's 75mm howitzers, so the III had at first the tank version of the infantry's 37mm Pak. In fact, the parallel is direct between the guns of the tanks of the 1938-1940 armored regiment, and those of the infantry regiment.

Within a year a more powerful 50 [*5 cm Kw.K. 39 (L/60)*] was installed in the III. Tanks so armed appeared with the long 75'd IV's in Russia to open the 1942 Spring offensive—but by then the III had outlived its usefulness. Attempts were made to mount in it the IV's original 75, and to solve production facilities by combining III and IV chassis into a hybrid tank. This attempt was given up in 1944.

By 1942 the Germans seemed to be certain that the only armored force tank was a good-sized medium tank, armed with a high-velocity gun. It is noteworthy that, as condensed by the short 50, the Germans seem just before the war to have anticipated the fire power race. But they underestimated the importance of armor protection.

Big Tanks

Before deciding to produce the I's (a decision that represented a terrible boner), the Germans had played with bigger and better tanks. These included some well-armed jobs under the cover name of "*Neubaufahrtzeug*" (New-type motor vehicle). They were 24 to 26 ton tanks, standing rather high, with only 14.5mm armor. Most had a short 75, though some combined heavier armament with a coaxial 37mm gun.

U. S. Army

Big Tanks—One of the famous Tigers.

The Germans confused foreigners in 1939 (before the war) by showing off these tanks in photos and exhibits. The Germans were not very secretive. (In 1938, when the III's and IV's were still hot off the production griddle, the armed forces magazine DIE WEHRMACHT ran a thorough take-out on appearance, armament, and classification of the I-IV series.) This caused outsiders to mislabel two of the abandoned tanks "Mark V" and "Mark VI." A few of these tanks saw service in the war. They were landed at Oslo in the early days of the Norwegian Campaign, and patrolled the railroad from Oslo to Bergen.

Since the I-IV series failed to meet requirements for a tank fit to assault heavily fortified positions, in 1938 Henschel began to experiment on a 33 ton tank with 2-inch frontal armor and the IV's a short 75. The project designation was VK 3001 (first two digits stand for weight in metric—2200-pound—tons); the designation conveying tactical mission was *DW I* and *II*—for *Durchbruchwagen*, or breakthrough tank. Though parts of the DW's were still lying around Germany after VE Day, the tanks never saw service. The 1940 reports that the Germans used heavy tanks against the Maginot Line were incorrect.

In 1940, there developed the idea that thick armor and a small gun might be the proper basic characteristics for future heavy tanks. Henschel—famous for trucks and locomotives—began on a project for a VK 6501 (71 US tons) in this class. Interesting—recalling American objections to heavy tanks' because of transport complications—the Germans planned to have this tank break down into three loads for rail travel. The project was never completed.

Henschel also tried the VK 1801—a heavily armored II. A similar VK 1601 improvement on the little I was also attempted before the Germans would give up their early tank models and write off the production investment—or use it for self-propelled mounts exclusively.

As is obvious from production orders and actual early combat experience, the Germans did not consider big tanks essential. They do not seem to have been impressed by late World War I French efforts to build monsters—or similar British efforts in the 1920's, and actual Russian production in the 1930's. The experimental work done above appears to have been in the nature of insurance—to acquaint German industry with problems of design, should a pressing need for larger vehicles develop.

In general, German industry tried to get experience on the next larger tank, before there was a call for it. They knew that it had taken Krupp 2½ years to get the I designed and into production.

Moreover, during the period up to the Russian campaign, tanks seem to have been pretty much the Army's business. And Guderian—as the prime Panzer advocate—has shown throughout his career that he prefers a proven tank in the hand (albeit it may not be the best) to a gaggle of super-doopers in prototype form, which industry is vainly trying to produce in a form that will be reasonably bugless.

But the practical military leaders had reckoned without propaganda-conscious Mr. Hitler. The Führer liked his weapons bigger, if not better. Growth of his interest in weapons coincided with his strong interest in the direction of the military campaigns—which may be said to have begun in earnest with the Russian campaign of 1941. With his taking over the job of Army Commander-in-Chief, in addition to his role as Commander-in-Chief of the Armed Forces, the *Heereswaffenamt* (army ordnance) and the tactical experts were at the mercy of capricious Hitlerian whim. It was General Buhle who, as Hitler's weapons expert, consulted the troops, and then handed down weapons characteristics to ordnance.

Mr. Hitler naturally took personal interest in the VK 4501 (49 US tons) project, which began four weeks before the attack on Russia. The experienced Henschel firm competed with the eminent automotive engineer Dr. Ferdinand Horsche. The latter, thanks to his famous racing cars, had obtained personal contact and a pull with Hitler. He finally managed to get 90 tanks of his Tiger P version built, but—although he had wonderful ideas, such as diesel-electric drive—the order went to Henschel.

The tacticians had now decided on a powerful big gun in a not-so-well-armored tank. The common or garden 88mm AA gun (*Flak 36*) was adapted as the *8.8 cm Kw.K. 36 (L/46)*. As the project progressed, the original VK 4501 specification was built up into a tank weighing 60-62 tons, with armor over 4 inches thick. The first *Pz.Kw. VI (Sd. Kfz. 181)*—as the Tiger was originally called—was delivered to Hitler on 20 April 1942, construction of the prototype having been begun the previous November.

In August of 1942 the first dozen came off the production line, and the first Tigers went into action on the Leningrad front in the fall. They didn't get to Tunisia until 1943—just about making it a dead heat with the propaganda photos reaching the Allies via neutral channels.

(Though a propaganda picture of a Tiger on the march through Tunis was picked up and circulated by US press services, concurrent pictures and reports on the first Tiger encountered by the British-American team were circulated at *Secret*. It would seem that, even if Hitler refused to keep the Tiger a secret weapon, the high school fraternity mentality of certain Anglo-American intelligence folk caused automatic correction of his error. In 1944, the *New York Mirror* published photos of the first Royal Tiger specimen well before *Secret* photos of the same vehicle were received in the US.)

It is interesting to note that the Germans were then considering a heavy breakthrough tank—for assault on well-fortified positions—even before encountering the heavy KV's in Russia. Equally interesting is the fact that, when the prototype was exhibited to Hitler, the Baldwin Locomotive works had the M6 60 ton heavy. Compared to the Tiger, it was a dreamboat so far as mechanical reliability went. It had a better horsepower-weight ratio, and exerted comparable ground pressure—though it mounted only a 3in. (76mm) gun.

The Tiger—(it became officially the *Pz.Kpfw. Tiger* in February, 1944)—was never an armored division tank. It was assigned to GHQ battalions, which were usually assigned to corps. In 1944, there were also GHQ Tiger Companies, with T/O strength of 14 Tigers and 36 remote-controlled B-IV demolition vehicles.

The "Ideal" Tanks

The Germans got quite a shock upon encountering the Russians' T-34 (31 ton) medium tank. The Morosov design team is thought by many to have revolutioned armor design by creating this fine tank with well-sloped armor. Compared to such a good ballistic design, that of bluff-walled boxcars like the Tiger and Big Four was inefficient and unimaginative German neglect of armor casting development, and preference for rolled, face-hardened plate was in part responsible—but then the T-34's hull, if not the turret, was of plate.

The Germans at once rushed two new tanks, with similarly efficient hull design. MAN took on the medium that was to replace the IV. In the fall of 1942 they put this Panther [*Pz. Kw. V (Sd. Kfz. 171)*] into production. It looked much like the T-34, and went into action on the Eastern Front in 1943. Its 80mm inch well-sloped frontal armor was proof against the original bazooka. It was maneuverable, and could make about 20 mph. Its height of nine feet four inches was comparable to that of the Tiger and the US M4 Medium—but slightly higher than the III and IV.

A similarly rushed job was undertaken by Henschel, which turned out the Tiger replacement in October 1943. Considered a year previously, this 75-ton tank was variously known as the *Pz.Kpfw. Tiger B*, or *II (Sd. Kfz. 182)* or *Königstiger* (Royal or King Tiger).

The speed with which both Tigers and the Panther were completed and produced gravely affected their mechanical reliability, and therefore their combat value. With a V-12 Maybach of only 590 H.P., the Royal Tiger was grossly underpowered. Considering how hard up Germany was for armor in those days, to require Henschel to change over to the Tiger B just after it was turning out the A, was little short of madness. The first Royal Tigers actually had to be fitted with turrets from the abandoned Horsche Tiger P's.

Although the Panther shot the weight of the mediums up from an original 15-18-tons to about 50 tons, neither in it nor in the Royal Tiger did the gun caliber go up. The change lay in velocity.

The Panther was fitted with a telegraph pole with muzzle brake designated *7.5 cm Kw.K. 42 (L/70)*. The Royal Tiger had a tank version of the last German "88" —the *8.8 cm Kw.K. 43 (L/71)*.

The Germans held that such velocities greatly eased direct-laid fire, permitting quick hits at good ranges. In combat against other armor, they believed it important to hit on the first round, if possible.

Thus the Model 43 "88" sent out armor-piercing projectiles on a trajectory so flat that the missile in its flight would seldom rise higher than the top of a tank. At 2000 yards, its ballistic capped AP shell was still traveling 2600 feet a second, from an initial muzzle velocity of 3,340 fps (2,600 was the starting muzzle velocity of the older—and to S troops—notorious "88"). At that range, this shell could penetrate 6.61inches of armor. It could hold nearly 8-inches at 1,000 yards. With AP 40 shot—with tungsten carbide core—velocity and penetration were greater.

There was a catch to all this though. The guns weren't made to last forever, and the crews had to keep accurate records in the gun's *Rohrbuch*—for after 500 rounds of high-velocity ammunition it was the better part of valor to fire less powerful rounds.

Stream crossing with such monsters presented a problem. Fording was the solution, the idea being that the tanks were to be built with water seals, and provided with tall ventilation and escape trunks. The Tiger A and Panther were supposed to be able to ford water 13 feet deep. But the Buck-Rogers type paraphernalia proved too complex to be practical.

At the end of the war, many Germans still thought highly of the Panther, and even of the Royal Tiger. The latter, despite its weight and 6inch frontal armor, could make 24 mph, and was mobile enough, thanks to tracks 32½ inches wide.

Acme

Blitzkreig material on German assembly line in 1940 for use in the drive to the West.

The Monster Department

The Germans have pointed out that the value of the Panther and even of the Royal Tiger has been obscured by poor construction—by defects which had nothing to do with their tactical utility. Much of the blame may be laid to those who conspired to freeze out of the German armor program the really experienced automotive mass-producers—Cologne Ford and Opel. For German tank production was not handled by any equivalent of America's Detroit.

The psychological effect of the Tiger A—both on Axis and Allied troops and publics—has obscured the all-important medium tanks. It has also confused the armor picture by failing to place the breakthrough heavies in proper perspective.

While the Tiger project was going on, the Krupp-Egelin boys were at work on the "E" series of monster tanks. The engineers there toyed with the E-110, E-130, E-150, and E-170—the numerical designations referring to the weight in metric (2200 pounds) tons. In 1944, they wanted to rearm the IV with the Panther's 75, and the Panther with the long 88 of the Royal Tiger. They were gun-mad.

Their prize project—from what should have been called their psychoneurotic department—was (if you have high blood pressure do not read this) a 1,500 ton tank with an 800mm (about 32 in.) gun. Two 150mm guns were to be mounted on each quarters of the stern. Nine inches of armor were to shield the front. Power was to be provided by four big submarine diesels. The U. S. Navy's super battleship *Missouri* mounts only 16 in. guns.

Could this project have been put through by Krupp on behalf of some of their Navy friends whom the RAF was rapidly robbing of their means of livelihood? Certainly it would seem that such a land battleship deserved to fly at least the flag of a vice admiral.

Strictly from Ripley were two tanks which Krupp actually built—though did not arm with the projected 150-mm gun with coaxial long 75 (quite a step up from the IV's short 75 and coaxial 7.9mm MG). Each tank was called a "Mouse." The 43inch wide tracks were powered by diesel-electric drive. This 1943 project was halted in 1944. The why and wherefore of this project cannot be analyzed here; it deserves special treatment.

Captured Tanks

When the Germans overran Czechoslovakia in the Spring of 1939, they found all ready for shipment to England (if the British would have them) quantities of the Czech tank industry's fine light TNH. An 8.8 tonner that later put on fat to reach 11 tons, it was the only war booty incorporated in regular German panzer regiments. Armed with a 37mm gun, it saw service in the "Ghost" division—first to reach the English Channel in 1940, and in 1941 in Russia. It was called the *Pz.Kw. 38(t)*. Like all German service armor, it used gasoline fuel.

Other captured vehicles—French, Czech, Polish—were used for police work, or given to satellites. Rommel capitalized on captured British armor; and while the Russians re-issued German armor, the Germans did not turn captured Soviet tanks against their owners. The Germans considered them unreliable. Not only that; the silhouette of a known Russian tank would be certain to bring down a hail of fire.

To be continued

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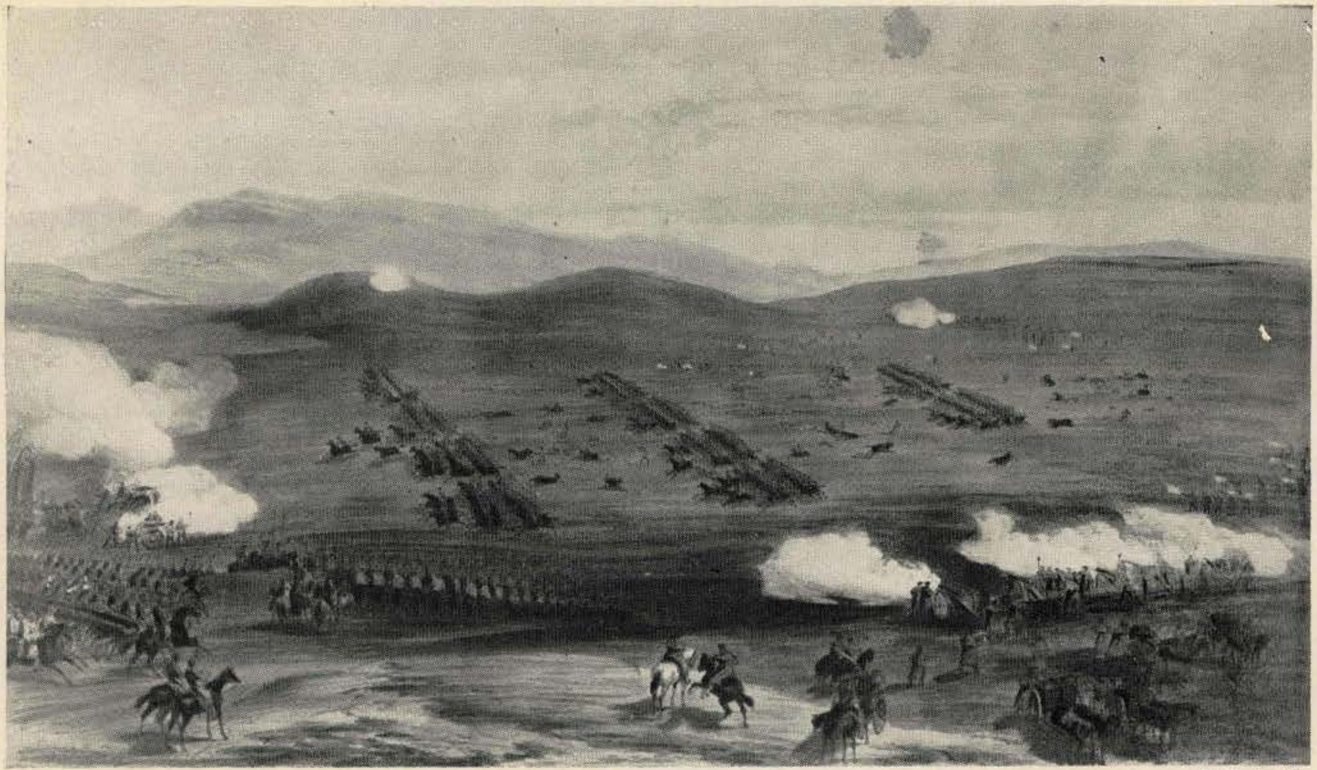

U. S. Army

*The Charge of the Light Brigade at Balaclava—1854.

MILITARY ENEMY NUMBER 1

CARDED

by MAJOR REGINALD HARGREAVES, M. C.

"Blow, winds, and crack your cheeks!
rage! blow!
You cataracts and hurricanoes, spout
Till you have drench'd our steeples,
drown'd the cocks!"

Shakespeare (King Lear)

ALL war," proclaimed General James Wolfe, "is an option of risks." Even so, wise, farsighted planning can go a long way towards reducing the element of risk to something reasonably near a minimum. Hence the emphasis laid on all that complicated web of pre-battle preparation which has come to be termed logistics. It is a systematized process of calculation which can anticipate the number of replacements an impending action will involve with almost the same accuracy as it estimates the total of ammunition to be expended; which can even forecast with reasonable precision the reaction of a known enemy to a particular tactical gambit.

But there is one element in warfare which, for all the aids proffered by modern science, remains virtually incalculable—the element of weather conditions.

Where this factor is concerned, the modern commander is almost as much the prey of chance as were his predecessors in the days before meteorology had become the short-range aid to planning that it is today.

It is the hiatus between long-range battle planning—culminating in a definitive Zero hour not susceptible to much, if anything, in the way of deviation—and the short-range quality of meteorological prophecy, which constitutes the modern commander's problem. This is clearly witnessed by the momentous decision demanded of General Eisenhower on the very eve of the landings in Normandy; landings which unlooked-for meteorological conditions threatened to render utterly impractical. All of which leads to the conjecture that the commander of olden times was in no worse case (while being spared one additional worry), in the days when the incidence of favorable or unfavorable weather, being virtually incalculable, was just something else on which he had to take a chance.

It is questionable, for example, if Caius Julius Caesar was aware, or had been apprised, of the fact that at certain seasons of the year the predominant wind in the English Channel blows from France towards England. It is quite probable that a sudden urge for those English oysters which had so greatly taken his fancy, impelled the conqueror of Gaul to set his fleet in motion at a moment when the prevailing wind just happened to be in operation. A little earlier or a little later, and he might very well have found himself blown right off his course, and landing on the unwelcoming shores of Bantry Bay—there to make the acquaintance of Irish potheen rather than satisfy his craving for that edible bivalve deriving from the *genus Ostrea*. By such chops and chances is world history made!

For that matter, the "luck of the wind," which greatly increased the range of his bowman's missiles, very considerably aided William the Conqueror's victory over Saxon Harold at the battle of Senlac (or Hastings) in 1066.

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*From the sketch by William Simpson.

That same "rude Boreas," which so threatened Eisenhower's D-Day plans played almost as conspicuous a part as the excellent quality of the English seamen's gunnery in the defeat of Philip of Spain's mighty Armada; as was openly conceded, even by the victors. For the medal struck in commemoration of the event bears the candid admission, "God sent his wind and they were scattered."

Equally, it was a "Protestant wind" that amiably wafted William of Orange to the shores of Britain, to take up the sceptre discarded in some haste by the unpopular James II. In later days, Napoleon's inability to control the unruly element held in their scattered harbors the huge fleet of "invasion" barges with which he had planned to descend on England's shores. It is small wonder that, with the residents of England's southern coast line, between 1803 and 1805, the first thing to do on getting out of bed was to cast an eye at the weather vane to see if "Boney" was still out of luck, or if an "invasion wind" had set in at last.

In 1778 that same "grand old harper, the wind" played no negligible part in the operations against General Sir Robert Pigot, the stubborn British defender of Rhode Island. A combined American-French force, under the fiery Sullivan and the dilettante Lafayette, was, according to Washington's careful dispositions, to seek support and reinforcement from the reserve of Gallic troops carried in the fleet operating under the orders of d'Estaing. On paper, the plans drawn up for Pigot's discomfiture promised excellently; and, given reasonable good fortune, even the differences which had arisen between Sullivan and the French—further complicated by the arrival of the native Rhode Islander, Nathaniel Greene, to "co-operate" with the temperamental hero of Trenton and Princeton[1]—should not have militated too seriously against the expedition's successful issue. But a gale arose which for generations after was spoken of as "the French storm"; and, on the heels of d'Estaing's indecisive encounter with Howe's fleet, the former had to run for it, *faute de mieux*, to the shelter of Boston harbor. Deprived of the Admiral-General's support, Sullivan was left with no option but to break off his enterprise against the dogged Pigot, and content himself with a fighting withdrawal which cost him almost as many casualties as he managed to inflict upon his adversaries. As an example of the malignant effect of adverse weather conditions on the outcome of a carefully devised operation of war, Newport, Rhode Island, is certainly not to be overlooked.

Again, in the Crimea, the great tempest of November 1854 very nearly wrenched the Allies from their tenuous hold on the peninsula. Strewing the Balaclava foreshore with wreckage; blowing encampments and dumps of stores clean into the air, as it brought down the hospital marquees to smother the wretched patients lying helpless in their ruins, the gale which raged with unabated frenzy for close on twelve hours, added immeasurably to the misery of as woefully mismanaged a campaign as the British soldier has ever been called upon to endure.

Smoke and poison gas—devices held somewhat erroneously to be exclusive to modern warfare[2]—are both dependent on the co-operation of the wind to be effective. If it refuses to "play up," both agents are apt to recoil on the heads of those who have sought to advantage themselves by employing them. This was true of more than one attempted German gas attack in the war of 1914-18, and had much to do with the abandonment of cylinder-gas offensives in favor of gas shells. For these could be utilized to plague battery positions and areas even farther in rear, with little chance of the fumes being blown back, in any strength, on those who had discharged them, should the wind suddenly elect to veer.

An early example of the successful aid an obliging wind brought to the laying of a smoke screen occurred during the attempted invasion of the English mainland by the Dutch in 1667.

On England's east coast, watching over the entrance to the Harwich estuary, the garrison of the lonely bastion of Landguard Fort had been reinforced with a few Marines and Artillerymen; while several Militia battalions and a corps of Volunteer Cavalry stood in readiness on the mainland to deal with any enemy attempt to force a way ashore. It was a fine clear morning in June when the hostile fleet, under de Ruijter, was sighted, bearing down from the north

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[1] Not unnaturally, Sullivan resented what was, in effect, an attempt to impose dual command, always a dangerous expedient, since there have been few commanders to work in such close harmony as the Duke of Marlborough and Eugene of Savoy.

[2] For example, Greek fire, a very early device, was an embryonic attempt to secure obscurity and at the same time impose immobilization by noxious fumes. Such, also, was the intention of the mediaeval "stick-pot."

MAJOR REGINALD HARGREAVES, M. C.

Educated for the Army; fought from the beginning throughout the war of 1914-'18, in France, Gallipoli and again in France, both as a Regimental Officer and as an Officer on the General Staff. Awarded the Military Cross, September 1916, and Mentioned in Despatches. Twice wounded; the second time with such severity as to persuade him at the war's termination to retire from the Service and devote all his time to that study of military history of which he had always made a hobby. Subsequently published a number of books of military history and contributed to the Service journals on both sides of the Atlantic. Most recent book, "The Enemy at the Gate," the history of 12 famous sieges, has been particularly well received both in the United States and Britain. Back in uniform during the recent World War; and since has settled down again with the pen and to those lecture tours which are the counterpart of his written work.

and hugging the coast line closely. It was clear that the Dutch Admiral's intention was to send a landing party ashore in his small boats, with the object of capturing Landguard Fort out of hand. But to cross the "no-man's land" of open shoal water under the fire of the Fort's artillery would obviously invite many casualties. So, with considerable skill, de Ruijter maneuvered upwind until certain of his craft were in a position to turn loose a smoke screen that successfully obscured the approach and debarkation of the hostile beach parties. That the device was deliberately set in motion is confirmed by the comment of a contemporary witness, who set it down that, "It was judged that the eight Dutch ships that sent such clouds of smoak upon the Fort out of the Rolling Grounds were merely for that purpose."[3]

The fact that, after heavy fighting and a number of casualties, the Dutchmen were ultimately driven back into their boats is no reflection on the ingenuity of the Commander who contrived to harness the wind to the warlike purpose he had in mind. And for once weather conditions had decided to be consistently helpful; and when that *does* happen, the man in charge of the operation can count himself amongst the singularly fortunate.

An opportunity for the employment of smoke occurred—but was not taken advantage of—on the third day of Gettysburg. Shortly after three o'clock on a broiling hot afternoon, with just a zephyr of wind stirring, some eighteen thousand Confederate troops moved out of the woods on Seminary Ridge, to advance across the open valley to the assault of the Federal position on the crest opposite. Both slopes, as the valley itself, were entirely devoid of cover; the distance to be traversed was a little under a mile. At eight hundred yards, cannon fire became extremely effective against ranks advancing in close-order and further bunched together through the necessity to tear down the fences on both sides of the Emmitsburg Road, the gaps in which quickly became crowded. The Confederate assault was unsupported by its own artillery; and General Warren on the Federal side—having noted, as had Private Griffin of Archer's brigade, that "the puff of white smoke, from a single cannon shot, rolled along the valley" parallel to the battle lines—was sufficiently anticipative of events to affirm that "it was inexpedient to fill the valley with a screen of smoke" before the Confederates came well within effective range. Unhappily for their chances of success, it never occurred to the Confederates deliberately to create a blanket of smoke behind which their troops could advance in relative safety. The result was that Pickett's charge was as costly and empty of result as it was magnificently gallant; not more than six thousand achieving their objective out of eighteen thousand who had debouched with such high hopes and splendid courage from the shadowy woods of Seminary Ridge.[4]

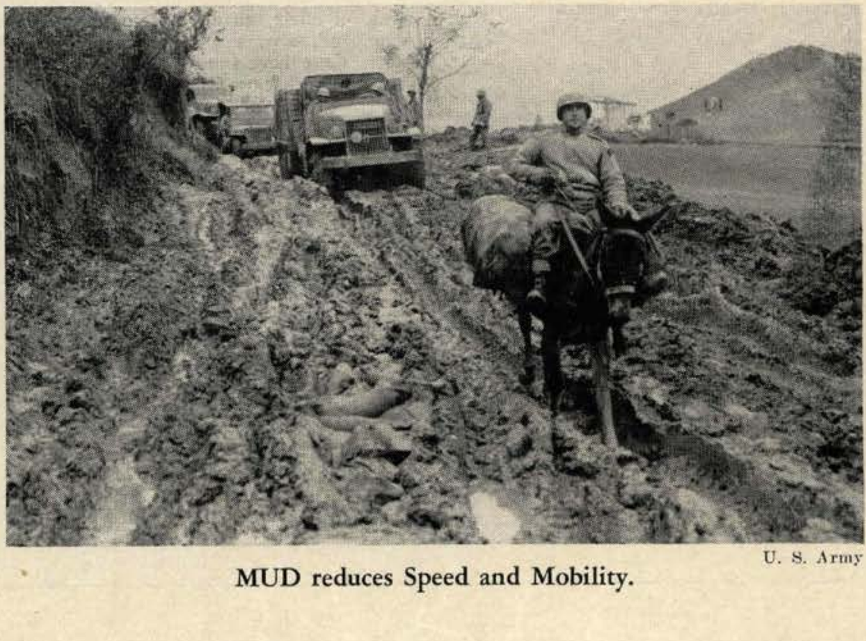
It is true that the Confederates were none too well supplied with gun ammunition; but the time comes when the Supreme Commander must remind himself that

"He either fears his fate too much,
Or his deserts are small,
That dares not put it to the touch,
To win or lose it all."

★ ★ ★

Mud, another outcome of inclement weather conditions, was once described by the Emperor Napoleon as "the fifth element"; and the sinister part it has played in warfare is familiar to all students of military history who have given the significance of the meteorological factor a moment's serious thought. Immobilization is mud's inevitable consequence; and detrimental as that inhibition has so often proved to those services of supply on which an army in action makes such imperative demands, its direct bearing on the progress of battle-fighting itself can be even more devastating.

Standing on the little ridge just to the southeast of Crécy, for example, it is still possible to observe the soggy hollow at the foot of the slope which, on that August day of 1346, proved the mud-filled deathtrap of the chivalry of France. It had been an inclement month throughout and on the night preceding the battle rain had fallen in considerable volume. With the English drawn up in battle array on the slope below Crécy's windmill, Philip of France had followed up the abortive assault of his Genoese arbalestiers by sending forward the mass of his mail-clad cavalry. It was then that the English bowmen "stepped forward one pace, and let their arrows fly so fast and so thick that it seemed as snow."[5] Impeded and slowed up by the heavy going in the hollow, the French Horse presented an almost helpless target; and almost in a moment the treacherous quagmire had been turned into a



U. S. Army

MUD reduces Speed and Mobility.

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[3] *Vide* the letter written by Silas Taylor, Keeper of the King's Store at Harwich, to his friend, Joseph Williamson, Keeper of His Majesty's Papers of State.

[4] The total length of line to be blanketed was about seven thousand yards. With the slight breeze to help, it would have been perfectly possible to screen this length of line with ordinary battery fire from the Confederates' 159 guns, ranged a little short of the actual Federal positions.

[5] Froissart.

bloody welter of stricken *destriers* and immobilized riders. For the Gallic cavalry were too weighed down, in their heavy plate armor, even to struggle to their feet in the greasy morass that had so fatally entrapped them. The longbow had proved itself the master weapon it was to remain until the distant days when it would yield pride of place to the firearm. But the demonstration had been very considerably fortified by the helplessness imposed on the target by the boggy nature of the ground to be traversed.

Dettingen, again, affords a perfect example of the manner in which the advantages of a fine natural position were lost through an impulse which lacked the patience to take advantage of them, and by a disregard of conditions brought about by the weather which was little short of cretinous.

The Allied Army, under King George II, had been neatly boxed in by two powerful French forces, disposed in rear and ahead of the King's troops; while the redcoats and their allies were also commanded by hostile artillery, on their left flank, from across the river Main. On the right flank, a steep slope, covered with impenetrable woods, cut off all hope of escape by circling round the hostile force barring the single road that crossed the miry water-meadows between the river villages of Aschaffenburg and Dettingen. Just short of the last-named hamlet, a bowl of relatively firm pasture land degenerated into a morass which—with the river bounding the other side of the highway—confined all movement to the road; and it was at this most advantageous point that de Grammont had been ordered by the French Commander-in-Chief, Noailles, to await the allied attempt to break through. Had the subordinate commander obeyed instructions, the British and their Hanoverian and Austrian coadjutors would have been committed to a head-on attempt to batter their way through a narrow defile, with no chance to deploy and broaden their front and no opportunity to attack on either flank.

Fortunately for the Allied cause, de Grammont, impatient to make contact with his adversaries, and egged on by certain young officers in his entourage who were thirsting for *la gloire* and the chance for personal distinction, abandoned his foolproof position to move forward and offer combat in the open greensward arena. The outcome was a general engagement in which the Allies, endowed with a heaven-sent opportunity to employ their full strength, succeeded, after a stern struggle, in hustling the French in utter confusion from the field. Gallic vainglory, disdaining the the aid of such humble partners as morass and mud, had incurred the deflation it unquestionably invited.

Mud was a good friend of the Allied force at Waterloo, where Wellington's numerical inferiority in artillery was offset by Napoleon's inability to maneuver his many batteries to full advantage, owing to the intractable condition of a terrain still obstinately glutinous as the result of an overnight downpour.

Passchendaele, on the other hand, offers a signal example of an offensive literally "drowned-out" in a sea of mud and slimy water which reduced movement to an absolute minimum and committed the troops engaged to living conditions as costly in sickness casualties as they were fatal to morale. Yet exhaustive enquiries into the weather history of the terrain had given grounds for a reasonable expectation of fine weather for the enterprise which, as things turned out, were most painfully unjustified by the event. So much for the law of averages as applied to meteorology.

★ ★ ★

Fog is another enemy to military enterprise, which can spike the guns of the defense as easily as it can cripple and bedevil the deployment of the assault. Early morning mist almost fatally delayed Marlborough's final dispositions at Blenheim until past high noon. For a river obstacle and marshy ground in his front demanded those careful arrangements which can only be the outcome of unobscured survey and detailed reconnaissance. At Ramillies, so thick was the ground fog, that "Corporal John's" approach march to positions previously selected would have brought him blundering straight into the French—who had anticipated him in the choice of the same ground—had not a cavalry reconnaissance, under Cadogan, warned him of his peril just in time.

Mist proved a remarkably good friend to the offensive, with Ludendorff's assault on the British V Army in March of 1918. With the German artillery going full blast, Gough's thinly spaced battalions "stood-to" in a thick haze that hung about, closely hugging the ground, till well on into the morning. Under its cover, with an enterprise and resolution that demands fullest recognition, the *feldgraus* infiltrated through the tenuous British line, until forward companies suddenly found themselves under hot fire from flank *and* rear. To their eternal credit be it said that the vast majority of the isolated formations stood firm, and fought it out and fell on their original ground. But the damage had been done; the line had been pierced and communications ruptured; Nature's own element of mist adding incalculably to that "fog of war" of which Colonel Lonsdale Hale was wont to speak with such heartfelt exasperation.[6]

Low-lying mist again, combined with a low cloud ceiling, was of considerable assistance to Von Runstedt's December offensive of 1944. Ground observation was limited to a few hundred yards; while cloud, pressing down close to the earth, ruled out that aid to the defense which the air forces can furnish so effectively. It was not, indeed, until the weather cleared and skies lifted, that an effective counteroffensive, both ground and air, could go into action, to halt the *panzer* divisions in their tracks and ultimately send the whole enemy enterprise reeling back to the line whence it had started.

★ ★ ★

Snow and frost, of course, have been obstructionists to warlike operations since time immemorial. The course of the second battle of St. Albans, February 17th, 1461, was unquestionably influenced by the fact that it was fought in a persistent, blinding snowstorm; as was the subsequent action of Towton—fratricidal enmity having spurred the respective Yorkist and Lancastrian forces to forego the customary amenities of winter quarters to continue the pursuit of their quarrel in the field.

Washington was another Com-

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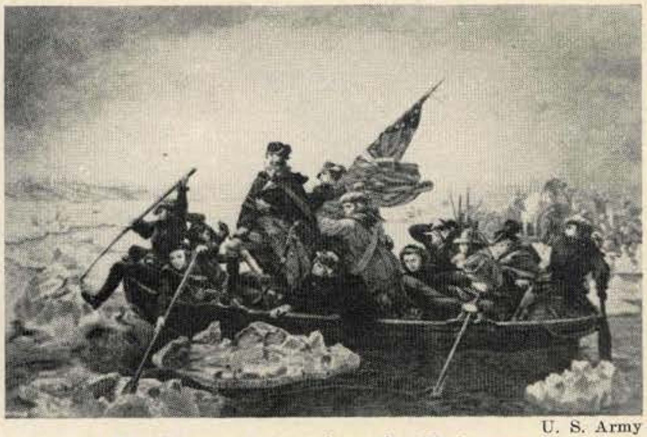
[6] Lt. Col. Lonsdale Hale, R. E., was instructor in Military History at the Staff College during the 'eighties; and it is to him that the coining of this well-known phrase is attributed. To Marshal Saxe, of course, goes the apothegm, *"La guerre est un science couverte de ténébres."*

U. S. Army

Tank traps on a frozen lake.


U. S. Army

Washington Crossing the Delaware.

mander with scant opportunity to respect the tradition in favor of withdrawal into winter quarters; and his stroke against Rahl's Hessians on Christmas Day of 1776 came with all the greater surprise for being delivered at so unorthodox a season of the year. After his successful Brooklyn and New Jersey campaigns, "Good-natured Billy" Howe had retired to New York, having arranged to hold the line of the Delaware as far south as Bordenton, until operations could be reanimated with the Spring. Bordenton and the neighboring Trenton were both garrisoned by Hessian auxiliaries; but in the last-named outpost discipline was known to leave a good deal to be desired.

Washington's initial plan was for an assault on the garrisons of both strongholds by three columns, two of which were to fall on Trenton, while the third "contained" the force in Bordenton. But so appalling was the weather, with unremitting snow and sleet and not a little ground mist, that only Washington's immediate following got to the assembly point at the hour set down for the assault.

If some intelligence of the Americans' movements actually reached the Trenton commander, it is clear that he did not take it too seriously; for the Hessians, with true Teutonic abandon, settled down to celebrate the Christmas festival on lines of riotous self-indulgence which were hitherto unknown beyond Germany's own borders. Moving across country with the utmost difficulty, and at the cost of many losses, including two men frozen to death, the American Commander-in-Chief effected a complete surprise on his adversaries—for the most part, "sleeping it off," one may surmise!—rounding them up *in toto* before going on to force Von Donop out of his Bordenton lair,[7] at a pace which denied the German all opportunity to clear away his sick and wounded. It was a daring and cunningly devised enterprise, pushed through with enormous resolution, in the teeth of the most adverse meteorological conditions imaginable; and it thoroughly deserved the success by which it was attended.

Napoleon won through the snowdrifts obstructing his passage of the Great St. Bernard in the Marengo campaign of 1800; but it was snow—with its accompanying bitter cold—as much as any other single factor which brought about the ruin of his *Grand Armee* of 1812. Equally, morale amongst the defenders of Paris, during the winter siege of 1870, was appreciably affected by the number of deaths from exposure to the cold suffered by the troops manning the fieldworks encircling the city.

At the other end of the scale, extreme heat, while always distressing to the heavily laden soldier, and sometimes capable of bringing about his death through apoplexy or exhaustion, rarely operates to the detriment of military operations themselves. Much distress was experienced by all ranks, for example, during the helter-skelter approach march, under a blazing August sun, at Warburg in 1760. Again, in 1775, the men lining Warren Redoubt and the tenuous trenches on Breed's Hill can have suffered little less from the baking sun than the waves of British redcoats, toiling up the slope under the weight of full packs and heavily laden cartridge boxes. Intolerable heat exacted its inevitable toll on the Highland Brigade's forced march to Magersfontein, in the South African campaign; and the history of all the "small wars" fought by the British in India is one long story of campaigns conducted under climatic conditions so torrid that even to think of them induces an instant outbreak of perspiration. Yet they were conditions which just had to be disregarded; and it can safely be affirmed that their influence on the course of operations was virtually negligible. For all that, small exception can be taken to Massinger's meteorological allusions in his summary of the qualities necessary to make a trustworthy fighting man:

". . . . . To dare boldly
In a fair cause, and for their country's safety
To run upon the cannon's mouth undaunted;
To obey their leaders, and shun mutinies;
To bear with patience the winter's cold
And summer's scorching heat; and not to faint
When plenty of provision fails, with hunger,
Are the essential parts that make up a soldier.

If one may be permitted the colloquialism, good Master Massinger said a mouthful.

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Reserve Corps Retirement

SR 140-180-25, D/A, 27 May 1949, defines and describes the Retirement Records System. The retirement credit year extends from 29 June 1949 to 28 June 1950.

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[7] Colonel von Donop had 2,000 troops at Bordenton, Rahl some 1,300 at Trenton.

PATTON "QUOTES"

". . . many, who should know better, think that wars can be decided by soulless machines, rather than by the blood and anguish of brave men."

Cavalry Journal, July 1916

◇ ◇ ◇

"Offensive mordant troopers, imbued with the fierce desire to destroy the enemy by always attacking him, will break troops who, having been overeducated in self-defense, enter the fight more desirous of escaping alive by the use of parries than of remaining victorious surrounded by slain opponents."

Cavalry Journal, April 1917

◇ ◇ ◇

". . . the constant power of envelopment which the mobility of cavalry makes possible will render strong points nothing but asylums for the safekeeping of the hostile idiots who infest them."

Cavalry Journal, July 1921

◇ ◇ ◇

"Tanks are a new and special weapon—newer than, as special, and certainly as valuable as the airplane."

Cavalry Journal, July 1921

◇ ◇ ◇

"An incessant change of means to attain unalterable ends is always going on; we must take care not to let these sundry means loom with undue eminence in the perspective of our minds; for, since the beginning, there has been an unending cycle of them, and for each its advocates have claimed adoption as the sole solution of successful war."

Cavalry Journal, April 1922

◇ ◇ ◇

"Untutored courage is useless in the face of educated bullets."

Cavalry Journal, April 1922

◇ ◇ ◇

". . . I am willing to admit that the time may conceivably come when in the immutable cycle of military endeavor, we shall see small professional armies of highly trained mechanical soldiers, operating simple yet powerful machines, again dominate the battlefield as did their prototypes, the heavy cavalry of the armies of Belisarius and Narses. Or, again, we may see the roadless machine, with all its apparent potentialities, sink to a position analogous to that occupied by the submarine, which but a few years since was so touted as the future mistress of the sea. Who may hazard a guess?"

Cavalry Journal, January 1924

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"The obvious thing for the cavalryman to do is to accept the fighting machine as a partner, and thus prepare to meet more fully the demands of future warfare."

Cavalry Journal, April 1930

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"Many soldiers are led to faulty ideas of war by knowing too much about too little."

Cavalry Journal, September 1933

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"Wars may be fought with weapons, but they are won by men. It is the spirit of the men who follow and of the man who leads that gains the victory."

Cavalry Journal, September 1933

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Medical Service in the Armored Division

by COLONEL W. E. WILKINSON

WHEN the First Armored Division was organized at Fort Knox, Kentucky, in July of 1940, the exploits of the German Panzer troops were fresh in the minds of the personnel assigned to the Division. The high degree of mobility, the flexibility, and the ability to make deep penetrations, which had been demonstrated by the German armored units, convinced Major L. Holmes Ginn, Jr. (later Colonel), the Division Surgeon, that radical changes would have to be made in the conventional medical services of the infantry and horse cavalry divisions in order that these medical services might effectively support the armored division. The medical service of the infantry division was obviously unsuited for armored warfare. The medical service of the horse cavalry division had several features which, with some modifications, gave promise of providing the basic framework for an armored division medical service.

Colonel Ginn was familiar with the reports of the British medical officer, D. W. Jolly, who had battlefield experience during the fighting in Spain; he was impressed by the excellent results obtained by the use of a mobile operating room mounted on an ordinary truck for the purpose of performing lifesaving surgery, near the front lines, on seriously wounded casualties who could not stand to be transported to conventional hospitals farther in the rear. The story of the development of the American version of the surgical truck appeared in the March-April 1942 issue of the CAVALRY JOURNAL.

The Basic Problem

After much study and discussion of the question, and as a result of the experiences gained during the Louisiana-Carolina maneuvers, it was finally concluded that the problem could be resolved into three principal components. First was the collection of casualties from the combat units scattered over a battlefield which might be prolonged in width and depth. Second was the problem of maintaining continuous evacuation of casualties from highly mobile and widely dispersed combat units. Third and lastly was the necessity of providing the combat units with close and continuous support by a surgical unit or units which would be capable of bringing lifesaving surgery to the wounded instead of the conventional practice of taking the wounded to surgical facilities.

In December of 1941 Colonel Ginn and his staff submitted their recommendations for the armored division

CLEARING STATION
Co A

U. S. Army

Division Clearing Station in the field.

In far-flung armored action how does the Medical Service function? Here is the setup on organization, disposition, communications, equipment and operations of a key part of the team.

medical service. These recommendations were approved with minor changes and became a part of the "Revised Tables of Organization, Armored Force, January 1, 1942." The First, Second and Third Armored Divisions fought the war in North Africa, Sicily, Italy and Northern Europe, organized in accordance with these Tables of Organization. The other armored divisions, the so-called light armored divisions, were smaller and were organized quite differently. Since current Tables of Organization and Equipment provide for a medical service quite similar to that used by the First, Second and Third Armored Divisions during World War II, this discussion will be limited to a consideration of the medical service provided for the so-called heavy armored division.

Since the tank battalion was the principal combat unit in the armored division, it was decided to devote primary attention to providing medical service for this organization. It was felt that the armored artillery would present no special problem, that the medical service with ordinary infantry could be readily modified to fill the requirements of armored infantry, and, that the medical service for the tank battalion could, without too much difficulty, be adapted to the requirements of the reconnaissance battalion. It seemed certain that conventional company aid men and litter bearers on foot were entirely unsuited for tank battalion medical detachments. Company aid men could not perform their primary mission of maintaining continuous close support to the combat troops because of the dispersion of the tanks in a tank company and because there is no room in the tanks for the company aid men to ride. Litter bearers, operating on foot, could not provide continuous evacuation of casualties from the battlefield because the speed of the tanks could not be equaled by walking men.

It was decided to support each company of tanks with two Medical Department enlisted men riding in a ¼-ton truck. These enlisted men were specially trained as surgical technicians so that they could administer emergency first aid on the battlefield in order to save lives, relieve pain, prevent shock and avoid further injury to the casualty. They carried with them in their ¼-ton truck sufficient medical supplies and equipment to enable them to perform these duties. Various forms of litter racks were improvised to permit these Medical Department enlisted men to use this vehicle for evacuation of casualties from the battlefield to the battalion aid station. A standard litter rack was finally adopted and is now available through medical supply channels.

Evacuating Casualties

Initially, it was assumed that these two Medical Department soldiers would evacuate the casualties from any tank that became disabled in the tank company that they were supporting. But experience on maneuvers, and later experience on the battlefield, revealed that disabled tanks caught fire so quickly and burned so furiously that tank crews could not wait for the arrival of medical aid. Although a great deal of time was spent training Medical Department personnel in the First Armored Division in the techniques of evacuating casualties from disabled tanks, medical personnel of this division never had an opportunity to apply this knowledge because of the German practice of continuing to fire on disabled tanks until they burst into flame. Therefore, it became necessary to train the members of all tank crews to evacuate themselves and their injured companions from disabled tanks. The assurance that they could evacuate themselves, or that they could be evacuated by their companions, was an important factor in promoting the morale of tank crews

The question of providing armored vehicles to be used for battlefield evacuation was considered and discussed at some length prior to combat. It was decided that each battalion surgeon should be provided with armored halftrack vehicles for battlefield evacuation; but, early combat experience resulted in the abandonment of this idea. There were several reasons for giving up the halftrack in favor of the ¼-ton truck. The halftrack looked like a combat vehicle and it drew enemy fire without being able to provide protection against anything other than small-arms fire. At night, on foggy days, or when the battlefield was covered with dust, the enemy could not identify the distinctive emblem of the Geneva Convention on the Medical Department halftracks. These vehicles were noisy, they were slow and cumbersome and they did not provide overhead cover. Maintenance was another factor which tended to vitiate their usefulness.

Communications

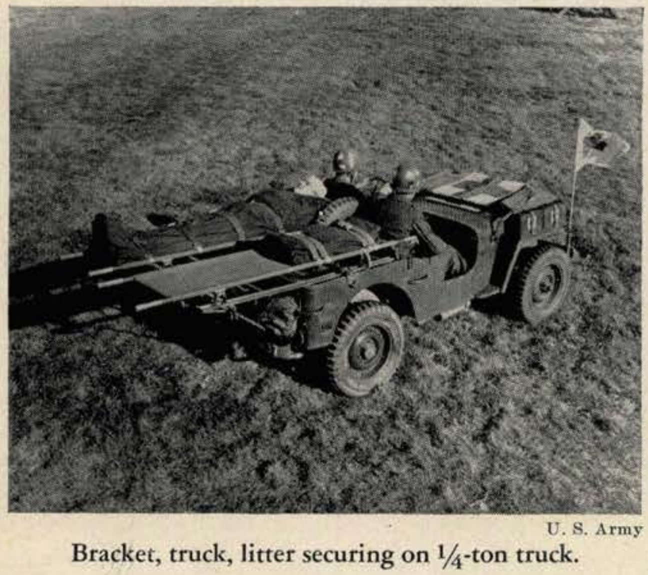
The problem of communications was recognized early. When infantry fights, movement is slow, the front of an infantry company is narrow, and communications between the platoons are usually visual or are carried out by means of foot-runners. But in a tank company movement may be quite rapid and the dispersion of the tanks in width and in depth prevents the two Medical Department enlisted men supporting the company from maintaining direct communications with all of the tanks. It is not practical to provide each of the ¼-ton trucks as-

A TEAM FEATURE—THIRD IN A SERIES

signed to the Medical Department with two-way radio communications. Therefore it was decided to give each of the battalion surgeons a two-way voice radio which would operate as an additional station in the battalion command net. By means of this radio, the battalion surgeon is able to listen in for calls for help from each of the tank companies. When the tank battalion is fighting as a unit on a narrow front, the battalion surgeon normally keeps all of his ¼-ton trucks with him at the battalion aid station. When he receives a call for medical assistance, he dispatches a ¼-ton truck to the tank company in need of help. When the tank battalion is marching in column, a ¼-ton truck is placed at the tail of each tank company in the column. When a tank company is detached from its parent battalion to support an infantry battalion, a ¼-ton truck accompanies this tank company and works under the supervision of the infantry battalion surgeon.

The battalion aid station in support of a tank battalion must render close and continuous support to the battalion, and this means that the aid station must be relatively, if not absolutely, mobile. Many of the tank battalion surgeons learned that the armored halftrack could be adapted to the requirements of a mobile aid station. The possibilities of adapting the personnel carrier, M44, as a mobile aid station have not been fully considered and further work in this direction is certainly indicated. The M44 has many advantages over the halftrack, perhaps the most outstanding of which is overhead armor protection.

There is a tendency for military men to think of the Field Medical Service in terms of medical battalions and hospitals. However, one must not forget that the most efficient hospital service is of no value unless the casualties are collected from the battlefield and transported to the hospital. It soon became apparent during World War II that emergency first aid on the battlefield, prompt evacuation of casualties from the battlefield, careful and efficient handling and sorting of casualties, and speedy transportation of casualties to the rear were basic essentials of the Field Medical Service. How to put these principles into practice on a fluid battlefield characterized by wide dispersion of combat troops both in depth and in width was a problem that had not been encountered in previous wars.


U. S. Army

Bracket, truck, litter securing on ¼-ton truck.

Area Responsibility

The principle of *area responsibility* was eventually adopted as the most satisfactory solution to this problem. By the term area responsibility it is meant that the surgeon of any organization is responsible for the collection and treatment of all casualties occurring in the area or zone of action for which his unit commander is responsible. In applying this principle, the surgeon of a combat battalion becomes responsible not only for casualties occurring among the organic personnel of his battalion but also for casualties occurring among attached troops or any other troops that happen to be operating in the area for which his battalion commander is responsible.

The principle of area responsibility applies equally well to the combat command. Initially, Tables of Organization did not provide for a combat command surgeon. But it early became apparent that a surgeon was needed to assume responsibility for the medical service in the combat command zone of action. As a temporary expedient, it was decided that the surgeon of the major element of the combat command would assume the additional duties of combat command surgeon. Current Tables of Organization do provide for a surgeon in each of the combat commands and in the reserve command. The adoption of the principle of area responsibility called attention to an old but partially forgotten principle of the medical service. This principle is that "A surgeon of any organization of the ground arms is responsible for the efficient functioning of the medical service forward of his base of operations; but, his responsibility ends at the rear boundary of his commander's area of responsibility or zone of action." Applying this principle, the battalion surgeon becomes responsible for first aid on the battlefield, for the evacuation of casualties from the battlefield to the battalion aid station, and for the efficient operation of his aid station. But he is not responsible for the evacuation system which operates in the rear of his battalion aid station. Likewise, the combat command surgeon is responsible for the efficient functioning of the medical detachments within the area of his combat command but he is not responsible for the operation of elements of the divisional medical battalion unless special circumstances of the tactical situation result in the attachment of the medical company from the medical battalion to the combat command.

The Medical Battalion

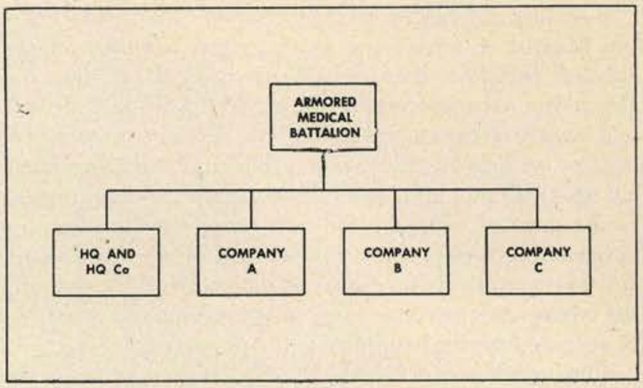
The armored medical battalion is an organic battalion of the armored division. It provides divisional medical service to all elements of the division. This includes dental service and divisional medical supply. It is organized into a headquarters and headquarters company and three identical armored medical companies. In combat, one of the armored medical companies normally supports each of the combat commands while the third medical company is either held in division reserve or is placed in support of the reserve command. The armored medical company is composed of a company headquarters, a litter platoon, an ambulance platoon and a clearing platoon. When the terrain, enemy interference or other considerations create a requirement for their use, the litter bearers are sent forward to evacuate casualties from the battalion aid stations of the combat command to a point that is accessible to the ambulances of the ambulance platoon. Usually, however, the ambulances will be able to evacuate casualties directly from the battalion aid stations to the clearing station. When the litter bearers are not required in the forward area, they are utilized in the clearing station for the transportation of casualties from ambulances into the station and from one tent to another. The litter bearers are also utilized to provide internal security and to perform varied housekeeping duties in the clearing station.

The ambulance platoon leader is perhaps the most vital link in the chain of medical communications and in the chain of evacuation. This officer, riding with his driver in a ¼-ton truck equipped with radio, normally remains in the vicinity of the command post of the combat command that his medical company is supporting. He keeps fully informed of the tactical and administrative situations and relays this information to his company commander. He also listens in on his radio for calls from all of the battalion surgeons in the combat command. When there are casualties in a battalion aid station that are ready for evacuation to the rear, the battalion aid station notifies the ambulance platoon leader by radio and the latter individual sends an ambulance or ambulances forward to the aid station.

The Company

Each medical company is capable of establishing and operating a clearing station for the combat command which the medical company is supporting. When necessary, separate clearing stations are established for each of the combat commands; but, when possible, it is advisable that the medical companies supporting the two combat commands pool their clearing platoons and establish only one clearing station. The clearing platoon of the medical company is organized around two mobile surgical operating units known as surgical trucks. The provision of two surgical trucks for each medical company permits the clearing station to advance or withdraw by bounds. The organization and equipment of the medical company enables the company commander to perform sorting of casualties and emergency surgical and medical treatment for saving life, relieving pain and preventing further disability. However, the organic personnel and equipment of the medical company are not adequate for the surgical treatment necessary to save the lives of casualties suffering from serious wounds of the chest, abdomen, and head; or, for the complicated treatment necessary for cas ualties with major wounds of the extremities.

The serious casualties referred to in the above paragraph are known as *nontransportable casualties* because their wounds are of such serious import that they will die if an attempt is made to transport them to an evacuation hospital before they have received proper surgical and medical attention. The experience of the First Armored Division during the early days of the war in North Africa made it apparent that surgical facilities must be brought forward to these casualties who could not stand being transported to the evacuation hospitals located in the Army Service Area. There were no mobile surgical hospitals on the troop list so it was necessary to resort to temporary improvisations. Platoons of field hospitals, reinforced with professional teams from the auxiliary surgical group, were utilized during the North African and Sicilian campaigns to provide mobile surgical hospitals which could operate in the immediate vicinity of divisional clearing stations. These hastily improvised surgical units worked out so well in the Mediterranean Theater of Operations that similar improvised units were allotted to all divisions prior to the invasion of Normandy. Since the end of hostilities, a specially designed mobile surgical hospital has been added to the troop list of the type field army. During an exploitation, when an armored division is operating deep inside enemy front-line positions, the mobile surgical hospital is frequently unable to render close support. In such situations an army clearing platoon reinforced by surgical teams and army ambulances should be attached to the division.



Dental Service

The dental service provided the American soldier during World War II was undoubtedly the best of any army in the history of war. But certain disadvantages were inherent in the World War II organization. Dental officers and their assistants were assigned to regiments and separate battalions; and, when the regiment or battalion was actively engaged in combat the dentists were assigned duties other than those of their primary mission. As a result, dental treatment was carried out only during the infrequent periods of rest from actual combat. Another difficulty was the fact that the division had no organic facilities for making artificial teeth or for repairing broken dentures. The First Armored Division captured considerable German equipment in North Africa, mounted this equipment in a modified 2½-ton truck and demonstrated that it was practical to use a mobile prosthetic dental laboratory within the armored division. As a result of these and other experiences and recommendations, current Tables of Organization and Equipment provide that all the dental personnel in the armored division shall be assigned to the headquarters company of the medical battalion where they function under the direct control of the division dental surgeon. ¼-ton trucks are made available to these dental officers and their assistants so that they can be dispatched to the several units of the division as required. A dental laboratory truck, together with specially trained personnel to operate it, is an organic part of the dental section in the medical battalion of the new armored division.

The medical supply facilities for the armored division are likewise a part of the headquarters company of the medical battalion. The S-4 of the medical battalion has the additional responsibility of serving as divisional medical supply officer on the staff of the division surgeon. He obtains medical supplies and equipment from army medical supply depots and issues these supplies and equipment to the medical battalion and to all the other units in the division. He is responsible for the control of critical items, for salvage and maintenance of medical equipment; and for taking over, inventorying, safeguarding and disposing of captured medical supplies and equipment.

The experiences of World War II left no doubt as to the importance of mental hygiene and the prevention and treatment of combat exhaustion and other forms of mental and emotional disturbances. As a result, a psychiatrist has been assigned to the staff of the division surgeon and specially trained enlisted men are provided in the Tables of Organization of each of the medical companies.

Personnel

The senior medical corps officer assigned and present for duty with the division is the division surgeon. His duties are solely those of a staff officer although when so directed by the division commander he may assume operational control over elements of the medical battalion. The division surgeon is responsible to the division commander, through the assistant chief of staff, G-4, for all matters pertaining to the mental and physical health of the command. In addition to the division psychiatrist, the division dental surgeon and the division medical supply officer, he has two other principal assistants. One is the medical inspector (preventive medicine officer) who is responsible to the division surgeon for carrying out inspections and making recommendations in regard to personal hygiene and military sanitation for all troops assigned or attached to the division and for the area occupied by the division. The division surgeon's other assistant is the administrative officer who is responsible for the routine administration of the office, for collecting casualty reports and other medical statistics, and for preparing the required medical reports. In combat, the division surgeon with his driver, riding in a ¼-ton truck, normally operates with G-4 at the division command post. When the division surgeon is operating at the forward echelon of the division headquarters, he normally places his medical inspector in charge of the remainder of his office which is located in the rear echelon of the division headquarters.

Special Problems

Certain special problems were encountered during World War II which are worthy of consideration. Some of these were old problems which were rediscovered while others are new. As we look forward to operations in the future, we may anticipate additional problems such as those resulting from the use of weapons employing nuclear energy. One problem which was universal during the recent war, but which varied in severity, was the prevention and handling of neuropsychiatric casualties. The Department of the Army is stressing the importance of preventing these casualties by emphasizing the psychology of leadership. Tables of Organization provide for the minimum requirements for handling such neuropsychiatric casualties as do occur.

Trench foot made its appearance during World War I and was a major cause of noneffectiveness. However, the lessons of World War I were forgotten and had to be relearned during the recent war. Courses of medical instruction in the service schools are designed to prevent a recurrence of this unfortunate set of circumstances.

Malaria has always been a serious threat to armies operating in areas where there is a reservoir of infection of this disease and where the anopheles mosquito is present. The service schools are attempting to keep military leaders up to date on the latest scientific discoveries for the prevention and management of this serious disease.

The administrative difficulties connected with the management of self-inflicted wounds at times posed serious problems for field commanders. The course on the psychology of leadership is attempting to provide the solution to this unpleasant problem.

Whole blood was made available to front-line medical units during World War II by the ingenious blood bank system in cooperation with the American Red Cross which obtained the blood from civilian volunteers in the United States. Detailed plans have been prepared for obtaining, preserving, transporting and administering whole blood to the wounded should this country become involved in another war.

Some of the greatest advances in military medicine were made possible by the discovery and use of such drugs as the sulphonamides and penicillin. Other antibiotics are being discovered and plans are being made for their use by the medical service in support of front-line units during any conflict that may occur in the future.

No less miraculous than the results obtained from the use of antibiotics were the remarkable advances in preventive medicine made possible by the use of DDT and other insecticides. Prior to World War II, typhus fever had decimated entire armies and was always a serious threat to any military commander engaged in operations on the Eurasian Land Mass. Intelligent and diligent use of DDT by military commanders eliminated typhus fever as a cause of sickness and death during and after World War II.

At the beginning of hostilities in World War II, United States military personnel were woefully ignorant concerning the provisions of the Geneva Convention and the rules of land warfare. The Germans, on the other hand, were well acquainted with these provisions and rules and, for the most part, abided by them. Some unfortunate incidents occurred as a result of our ignorance. It is impossible to predict at this time whether or not potential future enemies of the United States will abide by the rules of warfare and the provisions of the Geneva Convention, but it is important to remember that the Congress and the President have directed that the Armed Forces of the United States will observe these provisions and rules.

Caring for displaced persons and administering occupied territories imposed considerable additional burdens upon the medical service with the armored divisions in Europe. The division surgeon and the medical battalion commander must be aware of these responsibilities and must have adequate plans for the utilization of all available facilities, especially those of the medical inspector, the medical supply officer and the reserve medical company of the medical battalion.

Summary

The medical service for the armored division has been developed by adapting well established basic principles to the special requirements inherent in the armored division. The armored division medical service was put to the ultimate test during World War II and it proved to be sound. New techniques, and refinements of old techniques, which were developed as a result of experiences during and following World War II, have been incorporated into the medical service provided for the new armored division. The advent of the so-called atomic bomb has confronted us with new strategic, tactical, technical and administrative problems. Final solutions to these problems have not as yet been arrived at but progress has been made and studies which are now under way give promise of providing us with considerable technical knowledge which can be used as a basis for solving these problems. [Editor's Note: May God Bestow Upon World Leaders, The Power Of Reasoning To Avert Atomic Warfare.]

The Corps Fighting Team

"With the advent of armored fighting vehicles has come the need, in the interests of economy, effectiveness, and flexibility, of organizing two complementary divisions to function in the corps fighting team. The Infantry Division, modernized as needed, is still required as a major fighting unit of combined arms with the role of assault or defense, either alone or as part of a larger unit. It is the unit which gives continuity to the battlefield. It establishes and maintains a line behind which function the vital communications and bases. It advances that line as it moves forward. In such a unit all other arms and services exist and dedicate their efforts to further the missions of the infantry.

"Teamed with Infantry Divisions, to form a corps fighting team, are one or more Armored Divisions, and certain combat and service troops which reinforce or support the divisions or otherwise further the ends of the Corps Commander.

"The Armored Division is a complementary and coordinate organization to the Infantry Division. It is built around tank units as the main striking element. Its concept of organization differs from the Infantry Division in that in the Armored Division all other arms or elements exist and dedicate their efforts to serve the interests of the tank formations. It is an organization of tremendous shock effect, having high tactical and strategic mobility. It aids the Infantry Divisions in advancing the line forward by deep penetrations, without regard to exposed flanks, in order to strike deep into the enemy's vitals, thereby paralyzing a large section of the front holding up the advancing infantry formations. In the defense it aids the infantry in maintaining the continuity of the line by adding depth to the battlefield, counterattacking, destroying enemy Armor and making counter thrusts.

"Working together in the corps framework, supported by corps units, these divisions constitute a powerful offensive and defensive team. So teamed together they provide an economical, flexible organization."

Extract from Report of OCAFF Panel on Armor, 1949.

From the Book Department — Any Book in the English Language

USE THE ORDER FORM ON PAGE 64

Reconnaissance

Maintenance

Our Mobile Force in Europe

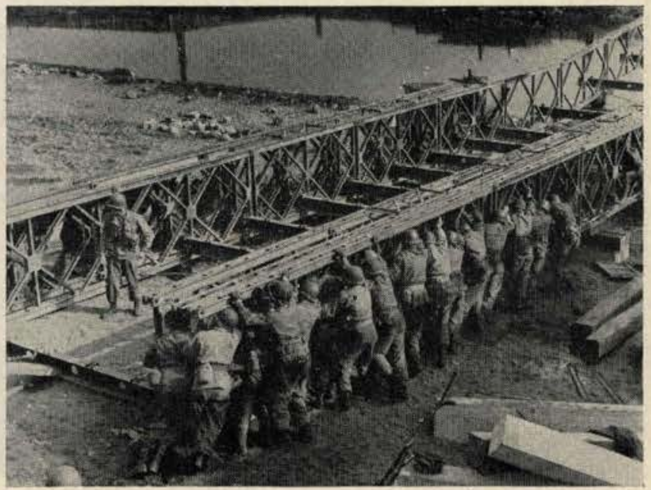
IN 1946 the U.S. Constabulary was organized to become the occupation's internal security force. Today this same Constabulary is a crack tactical unit, composed of three Armored Cavalry Regiments. This metamorphosis was the result of changing conditions in Germany and in Europe.

In the early days the security mission was accomplished by various means; prominent among these were the patrols —motor, horse and foot—totalling up to 1,000,000 miles per month throughout the U. S. Occupied Zone. Other means were check points along the zonal boundary and in the interior, raids on suspected areas of crime, and shows of force. Today all these police-type functions have been turned over either to the German law enforcement agencies or to military police units under the control of the Military Posts. Constabulary's gradual withdrawal from the internal security mission began in early 1947 at which time consolidation of units commenced. Where formerly small sections were stationed away from their parent organizations on operational missions, the goal now became concentration to battalion level. The Military Governor's announced goal was to withdraw the Constabulary from heavily damaged, industrial centers and place it in former German Army barracks, the familiar *Kaserne*. From over 230 troop locations during 1946, the number was reduced to under 20.

Constabulary's reorientation was climaxed by a complete reorganization during which the special Constabulary Tables of Organization and Equipment were replaced by standard Armored Cavalry Tables. The reorganization began during the summer of 1948, and by December of that year the newly formed Armored Cavalry Regi-

Camouflage

Bridging



Air and Armor

Recoilless Weapons

The U. S. Constabulary in Maneuvers

by CAPTAIN H. P. RAND

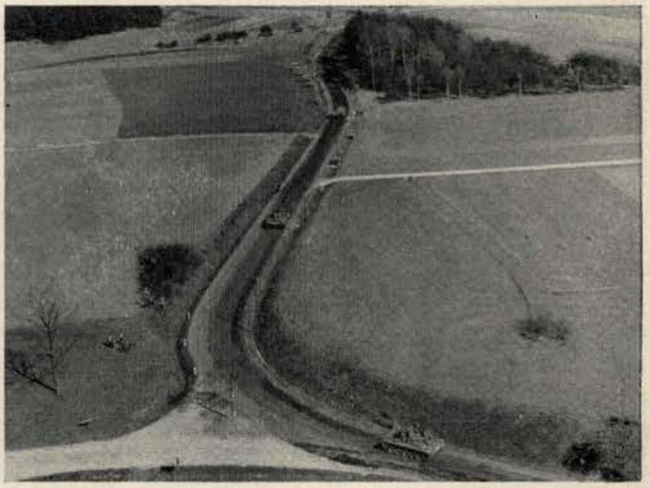
ments were in being. Although it has been less than a year since tanks became the primary vehicle within the Constabulary, there is ample proof that the technical and tactical use of the new equipment has been well learned.

The Constabulary plays a leading part in maintaining tactical security for the theater. In this role the Constabulary Headquarters became the operational corps on both Operation "Snowdrop" and Operation "Showers" (the EUCOM winter and spring maneuvers, respectively). It controlled all troops normally assigned to the Constabulary as well as the 1st Infantry Division and certain supporting units from the Military Posts. The employment of the principal Constabulary elements in conjunction with the standard T/O units of the 1st Infantry Division is of particular interest.

The primary purpose of the winter exercise "Snowdrop" was the testing of communications and the integration of elements of the two main combat forces in the Theater (the Constabulary and 1st Division). It also served to train the troops in sustaining themselves in the field during winter weather. The 1st Division participated with all its troops. Constabulary was limited to Headquarters units down to Regimental level; only sufficient troops took part in the exercise to maintain these headquarters. The maneuver was divided into two distinctive parts, all under the direction of Constabulary Corps.

Fording

Terrain and Road Net



The Spring Exercise held during April aimed at more ambitious accomplishments. The two major Theater combat units were freely mixed, elements detached from one and attached to the other, and entirely strange Military Post units integrated with the two. Although this was the first maneuver with Theater-wide participation, and though it brought many units into the field for the first time in their secondary missions, the exercise was thoroughly successful. Not only did the Infantry and Cavalry elements move freely back and forth between Division and Constabulary, but the same was done with the Field Artillery. The FA battalions were generally retained with their Combat Teams; however, they filled in wherever need for additional Artillery existed. In the attack phase Divisional and Constabulary medium tanks were employed as reinforcing artillery. They were massed in places where they could best obtain long range, flat trajectory fires, exploiting their special capabilities.

The two Constabulary Brigades with an armored cavalry regimental combat team each in line formed a slowly withdrawing counter reconnaissance screen during the first two days. The 1st Infantry Division with the 2d Armored Cavalry Regiment attached was in Corps reserve in the 2d Constabulary Brigade sector, preparing defensive positions along the canal. After two days the Corps ordered the entire screening force reduced to two Battalions and two reinforced companies, and the balance of the two Brigades withdrawn. The bridgeheads established by the Infantry Regiments were held until the last screening units could be moved behind the canal. Then the remaining existing bridges were blown and a strong defense, previously prepared, was established on the West Bank of the canal.

After a brief reorganization period, collapsed into a bare minimum of time for maneuver purposes, the attack phase of the exercise began. With a simulated 200th Division in the center, the 1st Constabulary brigade on the left, and the 1st Division on the right, assault crossings were made at 2300 hours one night. As soon as adequate bridgeheads were established, the Engineer battalions went to work and built a total of four bridges (two each Bailey and floating type). Armored Cavalry Regiments passed through the bridgehead units to rout the enemy in a headlong dash. Due to the unexpectedly stiff resistance encountered by the simulated 200th Division in the center, the Armored Cavalry Regiment originally scheduled to pass through its bridgehead was attached to the 1st Constabulary Brigade in the North and ordered to pass over its bridges.

As the engineers encountered more difficulties during the bridging operations than had been anticipated, some elements were taken across the canal over fords. Many of the Negro Infantry soldiers attached to Constabulary crossed the water in this fashion riding on tanks.

It is interesting to note that the winter maneuvers were "free" maneuvers in that the actions taken by commanders influenced the play; the spring games, however, were rigidly controlled according to a prearranged scenario. This made for a certain amount of lack of realism during the latter. For example, the Constabulary Corps commander had directed a close dawn-to-dusk air patrol over the line of the Ludwig Canal; nevertheless, according to previously prepared intelligence information, a strong armored Aggressor penetration was entirely undetected until reported deep in friendly territory.

The Aggressor Force was played extensively on paper and very little in reality. Only a handful of Aggressor agents were planted throughout the area to sneak into command posts, supply installations, and generally cause confusion by committing thefts of important documents. "Aggressor Maggie" even penetrated the airwaves with a broadcast enticing U. S. troops to surrender and give up the hapless task of fighting the superior Aggressor forces. No attempt was made, as at last fall's maneuvers, to have a substantial Aggressor Force in being.

Interesting communications practices included the installation of VHF (very high frequency) telephone and teletype circuits throughout the commands. They proved so successful that it is planned to install them down to Regimental level in the future. Much use was made of message pickup and drop by L-5 liaison aircraft. With radio channels greatly overtaxed (as they always seem to be in maneuvers), this proved a simple means to supplement communications.

A joint operations center for coordination of air strikes and other USAF assistance was established at Army (EUCOM) level. They responded to calls for assistance from all elements within the Corps. Ground support parties were furnished down to Regimental level. F-47 and F-80 aircraft acted both as Aggressor and later, when air superiority was established, as friendly air forces. Some of the films taken from the planes of insufficiently spread columns and other congested areas have since become excellent training films for participating troops.

Heavily taxed during "Showers" were the supporting elements. Seventy thousand troops participated whose vehicles had to be maintained, whose water had to be purified and brought to them, whose simulated heavy expenditure of ammunition had to be constantly re-supplied; their sick and wounded had to be tended; they wanted and received their mail, food, gasoline, PX supplies and even clean laundry. Particularly for the logistical elements of the European Command, "Showers" mean a severe test which they passed splendidly. Not only were the Combat Zones tested, but an elaborate system worked the Communications Zone into the problem as well. Specially loaded vessels arrived from the Zone of the Interior at the Bremerhaven Port of Embarkation and were handled just as during actual tactical operations.

All combat operations were under the direction of Major General I. D. White, Constabulary Corps Commander. His comparatively small headquarters handled all EC combat troops with great facility. The U.S. Constabulary has adapted itself well to its new task. Not only did the Corps headquarters function smoothly but the combat elements proved themselves well trained and prepared to take on the Armored Cavalry's primary mission of providing the eyes and ears of the Corps, and fighting it out with the enemy when contact is made.

Present plans call for the entire U.S. Constabulary to play the Aggressor force during the fall maneuvers which are to be held in the Grafenwohr maneuver area. As all Constabulary elements are undergoing field training during the summer months, it seems certain that the 1st Infantry Division will have a hard fight on its hands when meeting the Lightningbolt Aggressor force.

YERS
N R R ALLEN
MAJ GEN D-
BRIG
COL F T BO
B MILLER

U. S. Army

Front Row: **Generals Byers, Allen, McGowan and Roberts were among those attending the conference.**

CONFERENCE ON ARMOR

Armor's progress in organization and development was recently presented to a composite group of officers from the Army, Navy, Marine Corps, Air Force, and their reserve components in a conference on armor, held at The Armored School, The Armored Center, Fort Knox, Kentucky, on the 31st of May and the 1st of June this year. This conference constituted a current status report of the many things that have happened in armored development since the war.

The conference, initially suggested by the Commandant of The Armored School, Major General William G. Livesay, was concurred in by the Chief, Army Field Forces; it was held in the newly built and dedicated Deffenbaugh Hall at The Armored School. General Livesay, in his opening address to the gathering, gave the purpose of the conference. The idea was to bring those who have been on duty away from armor since the war, and those who have joined armor since the war, abreast of the modern developments.

The information presented went back to the armored conference held at Fort Knox in 1946, the reports of the Theater General Board, European Theater, held in 1945, and the reports of the Stilwell Board held in 1945 in Washington—all having to do with the developments, tactics, and organizational changes and equipment in armor. In conforming with the policy of keeping information on the latest developments in tactics, doctrine, and matériel before the using arms, a number of presentations of a highly confidential nature were made. Throughout, these presentations were designed to bring to the attending representatives a completely accurate and current picture of armor.

For the benefit of the some 250 conferees attending, a complete tour of all the facilities of The Armored School was conducted. During this tour each of the departments discussed briefly its scope of activity in contributing to the picture of training at The Armored School. A tour was also arranged for the conferees through Army Field Forces Board No. 2.

Brigadier General Bruce C. Clarke, The Assistant Commandant of The Armored School, gave the background for the conference, and showed what planning has taken place up to the present. He spoke briefly about the relationship between The Armored School and Army Field Forces Board No. 2. The Armored School, it was explained, is the research and developing agency for tactics and organization. The Board, on the other hand, is the research and developing agency for equipment. A very close relationship between Army Field Forces Board No. 2 and The Armored School is maintained. The cooperation between the two is a mutual proposition and highly profitable in results.

Later in the conference, a field demonstration was given by Army Field Forces Board No. 2, in which were demonstrated the latest developments in engines and transportation equipment; comparisons were made between the new armored vehicles and personnel carriers and the old; the benefits of the research being conducted were explained.

Of the material presented, there was included the report on the OCAFF Panel on armor held in February, given by Colonel W. P. Johnson, director of the Command and Staff Department. A report on British Armor was given by Lieutenant Colonel F. D. W. Seaver, of the Royal Armored Corps, attached to Army Field Forces Board No. 2. The combined conference on armor of the United States, United Kingdom, and Canada was presented by Colonel H. H. D. Heiberg, president of Army Field Forces Board No. 2. Armor in the type field army and corps, and in the armored cavalry regiment (light), was presented by Lieutenant Colonel S. McC. Goodwin. The armored division organization was presented by Lieutenant Colonel M. G. Roseborough. Armor in the infantry division was presented by Lieutenant Colonel R. M. Dalton. The latest communication developments in armored units was presented by Colonel C. A. Carlsten, director of the Communication Department. Maintenance in armored units was presented by Lieutenant Colonel J. G. Felber, director of the Automotive Department.

To sum up the conference, a complete discussion was held at the termination of the second day in which General Clarke, Assistant Commandant, acting as master of ceremonies, relayed questions from members of the audience to all the speakers present on the platform. Anything that had been presented during the conference was freely discussed. In addition to the fund of information presented at the conference in the form of talks, slides, demonstrations, and pictures, a packet of printed material was distributed to each person attending. This packet contained some 18 items of instructional material illustrating current developments in armor.

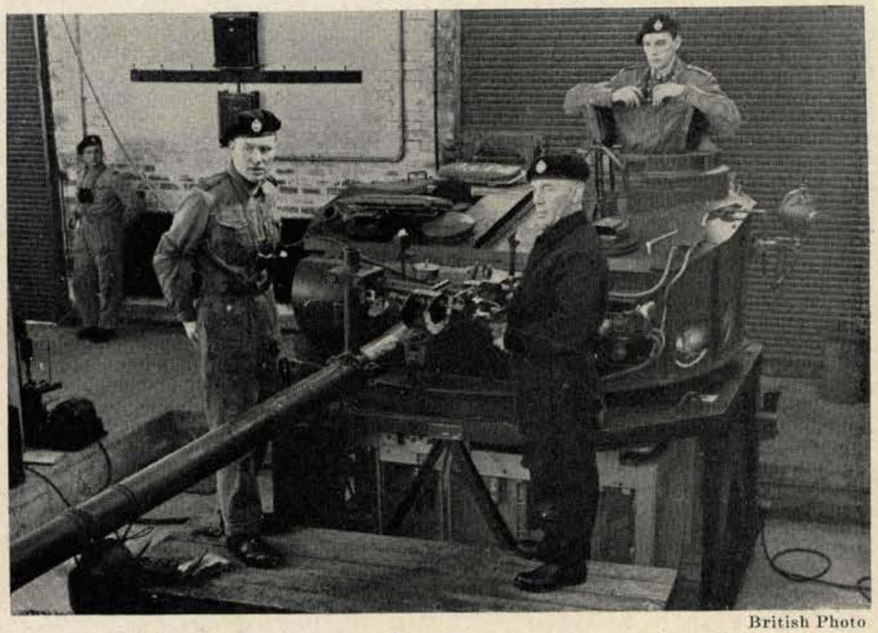
The reception of the material presented by the conference was ably expressed by Lieutenant General John R. Hodge, Commanding General of V Corps, Fort Bragg, North Carolina. General Hodge spoke as the senior officer attending the conference, and said that this had been the most successful thing of its type held to date. He expressed the hope that everyone there would do some thinking, in the future, about what they had heard. He expressed the thanks of the assembled group to the faculty, staff, and commanders present who made the two days' instruction possible.

Nerve Center of British Armor

by MAJOR JOHN NORTH

THE visitor to Britain's Royal Armored Corps Center at Bovington and Lulworth, Dorsetshire, in the south of England, will not easily escape a sense of history. Here, some dozen miles northeast of Portland Hill, he will find himself overlooking the English Channel which, despite all advances in the science of warfare, still retains a high strategic significance. He will be on the fringe of that "Egdon Heath" immortalized by the novelist, the late Thomas Hardy, in the days when it was unscarred by tank tracks; and within a short walk of "Cloud's Hill," the last cottage home of T. E. Lawrence, often called the "Uncrowned King of Arabia," who, as Private T. E. Shaw, served for a short spell in the then Royal Tanks Corps and sacrificed his life—on a motor bicycle—on the altar of speed. Finally, he will find in the Armored Fighting Vehicle Museum at Bovington the parent of all tanks—"Little Willie"—first demonstrated on Thetford Heath, in Norfolk, in 1915, in World War I, and built, ironically enough, under the auspices of a Naval Committee convened by Mr. Winston Churchill, then First Lord of the Admiralty. One hundred and fifty tanks were used on the Somme in the following year, by which time tank training was already being carried out at Bovington. From the days of that old battle—from 1916 onwards—the technical and tactical aspects of tank warfare have been studied at this Center without a break.

Today the Center comprises a Gunnery School and a Tactical School, at Lulworth; and, at Bovington, a School for the Driving and Maintenance of tanks and armored cars, including a Specialist Training Section, responsible for teaching the technicians in the Corps, and a School for Wireless. A Training Equipment Section—whose work is divided between Bovington and Lulworth—is responsible for insuring that training equipment is constantly brought into line with the latest development in the technique of tank warfare; an Investigations Section carries out trials of new types of tanks from the user's point of view and attends to the coordination of doctrine and training; a Publications Section is responsible for writing instructional books covering all aspects of armored training. A large Royal Electrical and Mechanical Engineers workshop, and detachments from the Royal Army Service Corps, the Royal Army Ordnance Corps and the new Women's Royal Army Corps, complete the organization.



British Photo

A class in gun drill on the indoor ranges at Lulworth.

Scope of Curriculum

Courses vary from one to 12 weeks, and as an indication of the scope of the curriculum it may be noted that the Driving and Maintenance course covers all types of tanks; all types of armored cars; self-propelled guns of the Royal Artillery; trucks and cars in use in the Royal Armored Corps; the training of vehicle mechanics and electricians for armored fighting vehicles, and the training of tank technical officers. Three tanks have to be "learned" in detail in 10 weeks. A month's intensive course at the Tactical School—where great emphasis is placed on ground-air cooperation—will include visiting days with the Royal Navy, the Royal Air Force, and a school of infantry. Again, the Gunnery School is responsible for the doctrine and the instruction in the gunnery and gunfitting for all guns used in tanks and armored cars, together with a certain amount of Visual Training. All courses are designed to produce instructors for both regular soldiers with field units and National Servicemen who will go back to Britain's Territorial Army. Potential vehicle mechanics and electricians will have done an eight-week basic course at a civilian training center.

The basis of all instruction at the Center is that these potential instructors shall get down to the practical

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Major John North was a former British Staff Officer who saw action with British and American Armies in northwest Europe, Italy and North Africa.

task of instructing within a week of their arrival. They are handed out the appropriate manuals, and told to prepare lectures to try out on their fellow students—and, as a last affliction, they have them played back on a wire-recording apparatus. "Parrot stuff" is killed at birth. The Center itself sends out a Method of Instruction Team (MOIT) that checks up on the methods employed by schools in the field, and keeps in touch with those employed by instructional centers in Allied countries.

On the tactical side the Center is pursuing a highly practical down-to-earth policy. The object of the Tactical School is to teach a tactical doctrine that will retain the mobility of the armored regimental group, which consists in general of an armored regiment, a motor company, and a battery of self-propelled artillery. This doctrine is based on the desirability of making armor self-reliant, and less dependent in the advance on infantry protection and artillery support. In World War II, against organized opposition, the brightest expectations of prewar exponents of armored warfare were fulfilled only at certain rare moments. It was in the Western Desert, a theoretically perfect battleground for tank warfare, that the tank met its master in the anti-tank gun, and tank tactics were reduced to the negative form of luring one's opponent on to one's own anti-tank guns. Thus, Britain's tank doctrine today is still founded on the tank's exceptional and essential power to combine fire with movement.

Doubtless the day will come when armor will fly into battle, and thereby move nearer towards the original sublimated conception of tank warfare in which armor shall strike at the brain of the enemy; but at the moment the Royal Armored Center is concentrating on the job of training officers and men to fight weapons they have or will have in the armored regiments, the armored car regiments, and the divisional regiments, R.A.C., in the event of war. Although it need not be doubted that a David for our modern Goliath will one day arise, some time must elapse before any thin-skinned airborne combat vehicle, mounting however good a gun, will be able to move about a battlefield against conventional heavy armor.

British Photo

A tank commander's view. Laying down a smoke screen on Lulworth ranges.

British Photo

Learning the control layout of a Cromwell tank in the Driving and Maintenance School at Bovington.

Dose of Tactics

The Center leaves nothing to chance in the dissemination of its doctrine. Every student, whatever the specialized nature of his training, is given a week's dose of tactics before he returns to his unit—a regiment that helps to insure that the doctrine in circulation is common throughout the Corps. Moreover, every year, in the autumn, the Center runs a grand get-together conference. Commanding officers of all armored regiments, all formation commanders, and senior staff officers from Britain's Army and the Armies of Canada, Australia, New Zealand and the Union of South Africa, with a representative from Fort Knox and the American Military Attaché in London, meet at Bovington to discuss the domestic affairs of the Corps and armored warfare in general. These discussions are fortified by up-to-the-minute information brought by observers with the British Forces overseas and with Allied armies. All the nations of Europe's Western Union, at one time or another, have been represented at Bovington; and a welcome is given to those visitors who go there either on specific missions or for courses from the far corners of the earth. Swede, Norse, Syrian, Iraqi, Egyptian, Persian, Afghanistan, Pakistan, Indian, Burman, Turk, Greek—so run some of the recent names in the visitor's list—assuredly a roll call of the free nations! The Royal Armored Corps Center is, indeed, not merely the nerve center of Britain's world of armor: it is a university of armored thought.

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Fort Knox

Fort Knox was named in honor of Major General Henry Knox, Chief of Field Artillery from 1775 to 1782, Chief of Staff of the Army from 1782 to 1783, and Secretary of War from 1785 to 1794. The post became a permanent military establishment in 1932. Since that time, it has been considered the home of United States Armor.

THE CHEAP WAR

by MAJOR ROBERT B. RIGG

EACH new weapon that multiplies its killing power over its predecessor, brings with it the futile hope that a future war can be fought on cheaper human terms than the last conflict.

The concept of "a cheap war" is not new, and the power of weapons to come will inspire additional ideas for the substitution of machines over men. The unusual destructive power of the atomic bomb increases the tendency to place complete reliance on a single weapon, or weapons over men. Fortunately, the viewpoint that we must maintain a balanced military-naval-air force is, for the moment, still dominant.

Ancient man discovered that he did not have to choke an opponent to death with his own hands if he had a spear. Killing became less personal with a bow and arrow. Man was striving to make war "cheaper" in human effort by the use of weapons. War became no less bloody when he used muskets; man could kill at a greater distance and with a greater element of personal safety—to himself. Artillery meant that more men could be erased at ranges greater than the hand gun. The invention of armor plate, and later tanks, was in line with man's consistent effort to make war cheaper. Airplanes with bombs increased the ranges at which one could kill, but alone they did not win battles or wars.

Mercenaries, fortifications, new tactics, improved weapons, gas, suicide planes and boats have all been created and employed in an effort by one side or the other to make war cheaper—either in respect to time limit of conflict, decisive results or human casualties for the user. There was no real cheap way to win. Victories were for the most part purchased in high human costs. Man still had to lock with man, and he will still have to as long as a bayonet or rifle bullet will penetrate human flesh.

The ancient Persian kings sought to spare their own troops by the hire of mercenaries. In this they eventually failed and were defeated. One need not specify other examples where mercenaries have failed. We may arm other nations, but in the event of war, can we purchase or ship them morale? Not unless we join with them in the dirtier tasks of combat with our own men alongside them.

The casualty cost of conflict has been lessened in the past by fortifications, but reliance on walls and forts alone proved futile. The great Chinese Wall and the Roman fortifications remained effective only as long as the spirit of those respective armies remained aggressive.

The French placed great reliance in a single form of defense that was intended to make their next war cheaper. The Maginot Line is a monument to the folly of this thinking.

It may be argued that these were passive measures, that victory can only be achieved by aggressive instruments. Japanese *kamikaze* planes and Mussolini's suicide torpedo boats were designed and applied to achieve naval victories at a cheap cost.

Hitler believed his blitzkrieg to be the formula for an inexpensive war. It was, against the weak.

There was a period in history when a single battle could decidedly influence the outcome of a war, or even win it. May one believe that single or even multiple bombings can alone decide another conflict? History reveals that modern weapons have not shortened war any. On the contrary, the improved instruments of death have simply made conflicts more costly by a multiplication of casualties and destruction. In earlier times the holocaust of war was generally removed from the civilian population. Today, a nation is liable to civilian casualties in excess of its military ones. But bombing, in addition to its destructive and demoralizing effects can at the same time forge a hatred among survivors that can increase their will to resist. All the implements of a modern war machine may be strewn

Diplomacy is still the cheapest substitute for conflict but we should recognize that if we are involved in another armed struggle, a victory cannot be purchased cheaply. Science has eliminated, not fathered, the chance of a cheap war.

in wreckage along roads and railways, with its logistical support—the industries in smoldering ruins—but the people of a nation may elect to resist as guerrillas or in a semi-guerrilla form.

Regardless of the extent to which destructive weapons and machines may be developed or used, the soft flesh of man must be their final target.

Drone planes may lock in combat, guided missiles may be shot down by automatic antiaircraft guns, driverless tanks may shoot at each other amid all the scientific refinements of crawling magnetic mines and similar machines, but no real victory can be achieved until the living men behind such machines can be eliminated or forced to surrender. As yet there is no substitute for man.

It is a popular American misconcept that dollars will buy most anything, but we have never been able to purchase time. The American public should not be lulled into a false sense of security by the presence of pilot models and blueprints of futuristic weapons. It now requires time to train men for the defense of their country. Even the most elementary positions of a modern defense machine cannot be filled overnight. Given even the best equipment and facilities it still takes months to produce a radio operator for a tank. Dollars cannot shorten this period of training. If this nation were attacked the United States would not enjoy the same period of unmolested mobilization we have had in the past. A declaration of war by an enemy will not be heralded by diplomatic exchanges but by exploding bombs of the aggressor.

Diplomacy is still the cheapest substitute for conflict but we should recognize that if we are involved in another armed struggle, a victory cannot be purchased cheaply. Science has eliminated, not fathered, the chance of a cheap war.

Future Features

Starting with the next issue we plan to run articles on The Armored Infantry, Tactical Air in Support of Armor, The Armored Engineers, The Armored Reconnaissance Battalion, Armored Break-Thru with its many ramifications and to continue our present scheme of balance for the Journal.

Mission of The Armored School

This is the School of the armored division and of tank and reconnaissance units. Its basic mission is to develop and teach the tactics and technique of armored units, which include tank and reconnaissance units of armored, infantry, and airborne divisions, armored cavalry units, separate tank units, and armored amphibious units. In carrying out this mission the School, through its instruction:

a. Qualifies officers as competent commanders of armored units.

b. Prepares officers for staff duties, to include the division general staff.

c. Familiarizes armored officers with the tactics and techniques of associated arms.

d. Insures understanding of and indoctrination and training in the teamwork necessary in the joint operations of the Air Force, Army, and Navy.

e. Qualifies officers and enlisted men as army instructors.

f. Trains enlisted men as leaders and technicians of armored units.

In the development and perfection of armored tactics and technique, the School serves as an agency of the Army Field Forces.

In addition to its regular courses of instruction, the School conducts special courses, such as short courses for the National Guard and Organized Reserve Corps as prescribed by the Chief, Army Field Forces. It also prepares and administers Army Extension Courses in armored subjects, furnishes instructional material to the civilian components, and prepares training literature on armored subjects.

NEWS NOTES

New Cavalry Branch Chief

Colonel William J. Bradley has assumed the post of Chief of the Cavalry Branch, Career Management Group, Personnel and Administration Division, the assignment branch for officers of the Cavalry. He succeeds Colonel Walter Burnside. Colonel Bradley graduated from Norwich in 1924. He subsequently served with various of the cavalry units and was graduated from the several Cavalry School courses. During the war Colonel Bradley served as Executive and Commanding Officer of the 8th Cavalry Regiment and the 2nd Cavalry Brigade of the First Cavalry Division. He has just completed the 1948-49 course at the National War College.

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Foreign Policy Background

The Department of State has announced the publication of information on the proposed Military Assistance Program. Four items are available from the Division of Public Liaison, designed to give the people of the U. S. concise factual information on the background, purposes and provisions of the program. The material is designed to fill the needs for information as expressed in letters received by the State Department on the subject. The publications are available to organizations or individuals without cost. They include the following:

THE U.S. MILITARY ASSISTANCE PROGRAM. Foreign Affairs Outline No. 22. Discussion of purposes and general provisions of proposed military assistance program. 7 pages.

BACKGROUND INFORMATION ON THE MILITARY ASSISTANCE PROGRAM Statement by Walter S. Surrey, Deputy Coordinator for the Military Assistance Program in the Department of State. Detailed presentation of various aspects of the program with question and answer section. 15 pages.

FACT SHEET—THE PROPOSED MILITARY ASSISTANCE PROGRAM. Brief, concise summary of major aspects of the program. 2 pages.

QUESTIONS AND ANSWERS ON MILITARY ASSISTANCE. Selection of questions most frequently asked in connection with the military assistance program. Approximately 16 pages.

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Army Vehicle Rebuilding Program Saves Millions In Germany

Army Ordnance installations in the United States Zone of Germany have rebuilt and reclaimed vehicles, engines, tools, tires and miscellaneous machine parts having a total estimated original cost of more than $110,000,000 in the past two years, the Department of the Army announced.

Cost of replacing this equipment at present prices is estimated at $220,000,000. Restoration was accomplished at an expendiure of approximaely $35,000,000, including $5,250,000 for American materials, and $29,750,000 for German labor and German materials.

Working with stocks of American war materials that remained in Germany after substantial quantities had been shipped back to the United States or transferred to allies through the Office of Foreign Liquidation, Ordnance shops in United States-occupied Germany rebuilt nearly 38,000 vehicles and trailers of all types in the two-year period ending April 1, 1949.

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Army Creates Separate Command In Austria

The Department of the Army recently announced that the long considered plan of creating a separate Army Command in Austria has been approved and placed into effect.

Since Lieutenant General Geoffrey Keyes has been the High Commissioner in Austria and John J. McCloy has become the High Commissioner in Germany, a separate Army Command in Austria is deemed necessary for the efficient operation of the two offices in their relation to the State Department and the Department of the Army.

The approximately 9,000 military personnel in Austria will constitute a command separate from the European Command except for certain logistical and administrative support. The principal change in the status of the Austrian Command with respect to the European Command is that henceforth in purely military matters General Keyes will deal directly with the Joint Chiefs of Staff.

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Hellcats to Meet

HELLCATS! The 3rd Annual Convention of the Hellcat Association of the 12th Armored Division will be held at the Seelbach Hotel, Louisville, Kentucky, September 3rd, 4th and 5th. Further information is obtainable from the Executive Secretary: John J. Collins, 21 Brushton Ave., Wilkinsburg 21, Pa.

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5th Armored Division Convention

The 3rd Annual Convention of the 5th Armored Division will be held at the Deshler-Wallick Hotel, Columbus, Ohio, September 1st, 2nd and 3rd. Further information is obtainable from Robert Toney, 5th Armored Division Association, Deshler-Wallick Hotel, Columbus, Ohio.

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Eleventh Armored Division Reunion Convention

The annual Convention of the Eleventh Armored Division will be held at the Hotel Cleveland, Cleveland, Ohio, August 11th, 12th and 13th. Further information available at the Eleventh Armored Division Association, c/o Hotel Cleveland, Cleveland, Ohio.

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Army Engineers Let $1,341,637 Contract for Nation-wide Synthetic Fuels Survey

Major General Lewis A. Pick, Chief of Engineers, recently announced that, in accordance with requests of the Department of the Interior, a $1,341,637 contract for a survey in 37 States and Alaska, to determine suitable general areas for the manufacture of synthetic liquid fuels, had been awarded to the firm of Ford, Bacon and Davis, Incorporated, of New York City.

SECRETARY OF THE ARMY

U. S. Army

The Honorable Gordon Gray, former Assistant Secretary and Undersecretary of the Army, sworn in on June 20th as Secretary of the Army, to succeed Mr. Royall.

The current survey will follow the pattern developed by a sample survey made in portions of three states last year by Ford, Bacon and Davis, Incorporated, under a $114,000 contract let last June.

The initial survey was in the nature of sample studies to determine basic techniques and methods of evaluating information for use in the nation-wide survey. Summaries of the sample survey are being prepared by the Corps of Engineers and will be distributed to the public by the Bureau of Mines, Department of the Interior in the near future. The reports indicated a large potential of raw materials in the areas surveyed for production of synthetic liquid fuels from the raw materials, coal, oil shale, and natural gas.

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Retirement Reserve Components

The Senate Armed Services Committee has reported out the bill (S. 1939) and the House Committee a corresponding bill to fix July 1, 1949, as the date on which reserves must begin to earn their 50 points credit in order to qualify under Title III of Public Law 810—80th Congress.

Public Law 810, which this bill seeks to amend, was passed in the closing days of the Eightieth Congress. At the time it was passed by the committee it was intended that the earning of points would start sometime in January, 1949. Section 312 stated that "the provisions of this title shall become effective for each of the services concerned when directed by the cognizant Secretary, but not later than the first day of the seventh month following the date of enactment." This section was added to make certain that the Secretaries would issue ap-

NEW ASSISTANT COMMANDANT

U. S. Army

Brigadier General T. L. Harrold succeeds Brigadier General Bruce C. Clarke as Assistant Commandant of The Armored School. A graduate of the U. S. Military Academy, Gen. Harrold commanded CCA of the 9th Armored Division during the war.

propriate regulations within 6 months of the passage of the act, after which it would be possible for reserves to begin to earn their points toward establishing their years of satisfactory service.

The regulations were not issued until January and there were further delays in completing the dissemination of such regulations to the various individuals in the Reserve components. The Comptroller General ruled that notwithstanding the language in that section, other sections indicated that date of enactment was the date from which points would have to be earned. The act was approved June 29, 1948. As a result of this ruling a great many Reserves would not have time between the receipt of the regulations, which were issued in January, 1949, and June 29, 1948, to meet the requirements for the first calendar year.

The effect of this bill is to overcome the Comptroller General's decision and establish a clear date after which satisfactory service must be earned. The enactment of the bill will result in conferring eligibility for retirement pay on an unknown but limited number of Reserve personnel who might otherwise fail to qualify by virtue of having lost this year of satisfactory service. Because of the uncertainty of this situation there is no basis for estimating the increased cost of the bill to the Government.

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Navy to Test New Ship Stabilization System

A new ship stabilization system designed to reduce the rolling motion of vessels by 80 per cent is being readied for extensive sea tests at the Naval Shipyard, Norfolk, Virginia.

A prototype of the system has been installed aboard the USS *Peregrine*, large minesweeper, which will test its effectiveness in rough weather at sea off the Virginia Capes in August.

The system, described as the "activated tank" method, has been under study by naval architects and engineers for a number of years, but never has been tested at sea with the modifications recently added.

Naval ordnancemen and engineers point out that accuracy of weapons would be greatly improved by the more stable firing platforms offered by a successful stabilizer. Carrier landing operations would be simplified, and the discharge of cargo and troops in open seaways, with the vessel at anchor, would be expedited.

Operating on a counter-balance principle, the new stabilizing system consists of two pairs of large tanks mounted on opposite sides of the ship. The bottoms of the tanks, each half filled with ballast water, are connected athwartships by transfer ducts.

Powerful, electronically controlled impellers automatically pump water back and forth at a rapid rate to counter balance the ship's rolling motion. Actually the motion is corrected just as it commences. The electronic equipment detects the roll at a very early stage, immediately producing a signal to actuate the pumping equipment. The pumping is accomplished with two large variable pitch propellers in the transfer ducts near the bottoms of the tanks.

The new control system was designed and constructed at the Navy's David W. Taylor Model Basin, Carderack, Maryland, at the request of the Bureau of Ships.

The activated tank stabilizing system can be installed on a new vessel at a cost in weight of approximately one per cent of the ship's displacement, Naval engineers believe. They estimate that the system would increase the monetary cost of ships by about three per cent, and that it would require only about two per cent of the ship's propulsive power.

The *Peregrine's* temporary installation of the stabilizing gear was attached outside the ship's hull to minimize structural changes on the ship. Should the method prove successful, the anti-rolling tanks would be built into the vessels' hull adjacent to the shell.

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Armed Forces Information Services

A joint Army, Navy and Air Force public information center is being established at 90 Church St., New York City, for the convenience of newspapers, magazines, and other news media in the New York area.

The establishment of the joint facility calls for movement of the 3d Naval District PIO and the Book, Radio, Television, and Magazine Section now located in Room 1521, 90 Church St., into available space in the 1st Army Public Information Section located at the same address. The location of the 3d Naval District PIO will be determined by the Navy.

The Marine Corps and the 1st Air Force will provide at least one officer and one enlisted man.

A joint photographic laboratory also is to be established subject to the availability of space and furnished by the Navy.

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The 67th Medium Tank Battalion, Camp Hood, Texas, has a number of copies of, *The History of The 67th Armored Regiment.*

Former members desiring a copy should send twenty-five cents ($.25) (for postage) to:

The Commanding Officer
67th Medium Tank Battalion
Camp Hood, Texas.

? ? ARE YOU WELL INFORMED ? ?

1. Another Big Four Conference was held recently in Paris. Can You name the Big Four ministers present and the countries each represented?
2. The names Vinson, Jackson, Black, Frankfurter and Douglas appear quite frequently in the news. Can you name the organization of which they are members and the remaining persons who comprise this distinguished group?
3. Name the lady recently appointed as Minister to Luxembourg.
4. The Atlantic Pact was signed on April 4, 1949. Do you recall how many countries signed this Mutual Defense Alliance?
5. On July 13, the Vatican in Rome announced the "unprecedented Decree" which automatically excommunicates all members of the Catholic Church who support communism. Can you name four countries which will be drastically affected by this order?
6. Leopold III, a former king exiled in Switzerland, is in the news again. Name country he formerly ruled and source of recent news interest.
7. An impending economic crisis for Great Britain is highlighted in the news. Can you name Britain's Chancellor of the Exchequer?
8. The Dutch-Indonesian peace settlement is long overdue. Do you know what role Admiral Chester W. Nimitz is playing in these negotiations?
9. Five countries of the Middle East have representatives in consultation with the U N Palestine Conciliation Commission at Lausanne, Switzerland in an effort to establish a general peace settlement. Can you name the countries?
10. Name the lady of Argentina who plays a dominant role in politics.
11. Can you name the Chinese number one Red who is causing our State Department grave concern regarding the present crisis in China?
12. The Chinese Nationalist government and the government of the Philippines are communicating with the president of South Korea regarding a proposed Pacific Union against Communism. Name the Presidents of the Philippines and of South Korea.

Answers on Page 53

EDITORIALS

Armored Cavalry—A Team Concept

ARMORED CAVALRY today is a dimensional force. Its basic properties are those of a team. Stemming from cavalry's traditional three-way role of mobility, fire power and shock action comes a broad pattern that ties with the dimensional aspects of modern warfare.

The Armored Cavalry field today embraces segments of the arms and services. Its scope is suggested in the various parts of the armored picture—the armored divisions, the armored cavalry (light) regiments, the reconnaissance units, the separate tank battalions and the amphibious tank battalions. In the light of amphibious operations and the addition of light aviation to its organic makeup, Armored Cavalry becomes triphibious in character. But of all its characteristics, it is the team quality that stands to the fore.

Here there has been an ideal medium for the blooding of unification in the key military area; subsidiary to the service level, but equally as important. Harmony among the arms and services of the Army has been promoted to a marked extent. Barriers have been reduced.

Many things have helped this along. For example, the Commanding General of The Armored Center and Commandant of The Armored School is an officer whose career developed in the Infantry Branch. The Assistant Commandant has a background in Engineers. The rotation of branch background at the top level in the college of Armored Cavalry is sound practice. In addition, not only cavalry officers attend The Armored School. Each course has a substantial quota of Infantry and Field Artillery officers.

The bulk of the officers in the separate tank battalions organic with the infantry divisions are assigned by the Cavalry Branch, and are cavalry officers. Personnel are interchangeable, and the mixture is healthy.

Armored Cavalry officers require a broad knowledge in this diversified team of today. Armored Cavalry's contribution to the forcing of the decisions on the battlefields of World War II is recognized by all. This heritage, joined with experience, organization, training and teamwork, wills to the team the means of decision on the battlefields of the future. It is not being in any sense romantic to call Armored Cavalry the Arm of Decision—the Arm of the Future. We feel that our leaders will accept the challenge of the future.

Connecting Links

THERE is one class of reader which this publication would like to have, has not had, does not have now, and, unfortunately, will not have in the future. He is Mr. Average American!

This is a professional military publication. It is intended for a particular field. It could be useful well beyond that limitation. The same may be said for the similar journals published by the arms and services.

If this journal and its sister publications could reach a cross section of average lay readers, there might be a much sounder appreciation of the problems of national defense, military service, mobilization planning, budget needs, balanced forces, and the related problems of foreign policy, international relations, etc.

Much credit is due the national commercial magazines for bringing to the average American some valuable material from the defense field, to provide some of the parts to a complex situation. They are, along with the newspapers, vital connecting links between the services and the public.

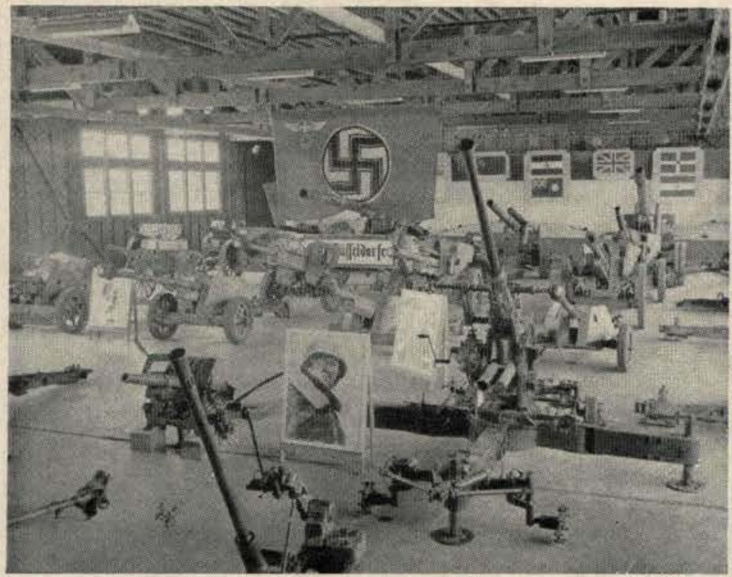
Unsolicited Articles

THE caliber of unsolicited articles which we receive from our readers leads us to believe that there is an unlimited number of good writers in the Armored Field. Our problem is to find some means to provoke these unknown potentials into action.

Can you help us in this regard? Do you know a story which would be of general interest among our subscribers? If you do then why not send it in and give your fellow branch members the benefit of your experiences?

We are particularly interested in getting more articles concerning small unit combat experiences and historical articles. However we are always happy to receive any material for possible use in the JOURNAL.

REMEMBER THIS IS YOUR JOURNAL. Many of you can contribute materially to the job of making vital material available for publication in OUR JOURNAL. THINK IT OVER. WHY NOT TAKE AN ACTIVE PART AND HELP US TO ACCOMPLISH OUR MISSION? Let us hear from you.



U. S. Army

Part of the fine Patton collection.

U. S. Army

Mrs. Patton speaking at the ceremony.

PATTON MUSEUM DEDICATION: Pleas for American strength to maintain world peace keynoted a ceremony held at Fort Knox, Kentucky, on Memorial Day. The occasion was the dedication of Patton Museum, in memory of one of America's great field commanders and armored cavalrymen—Lieutenant General George S. Patton, Jr.

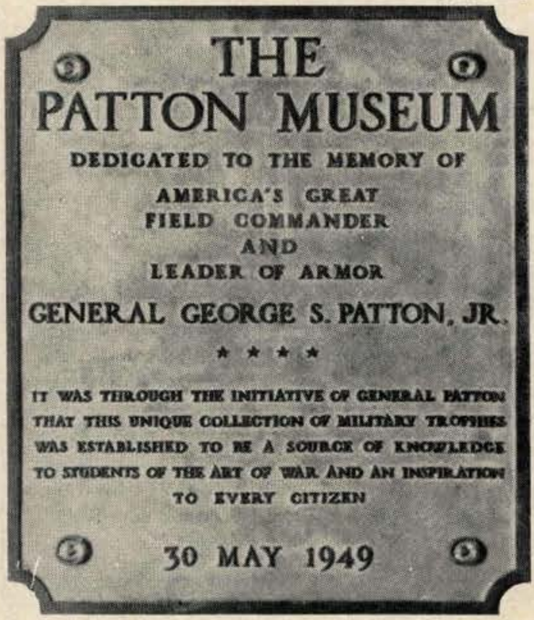
Feature addresses were made by General Lucius D. Clay, recently retired military Governor of Germany, and Mrs. George S. Patton, Jr., widow of the late commander of the wartime Third Army. Both spoke on behalf of strength and preparedness.

Patton Museum contains enemy equipment captured by the Third Army in its history-making drive across Europe. The various items, ranging from bullets to tanks, were assembled and shipped at War Department orders to Fort Knox, the home of American armor, to become the nucleus of a valuable installation. The original collection has been augmented by donations of material from many sources. A staff of four noncommissioned officers maintains the museum, which is visited daily by many travellers from all points of the nation, interested in seeing this unique collection of captured equipment.

The dedication ceremony was attended by a number of distinguished guests, who were welcomed by Major General William G. Livesay, Commanding General of The Armored Center and Commandant of The Armored School.

Dedicatory Placque.

U. S. Army



THE
PATTON MUSEUM
DEDICATED TO THE MEMORY OF
AMERICA'S GREAT
FIELD COMMANDER
AND
LEADER OF ARMOR
GENERAL GEORGE S. PATTON, JR.

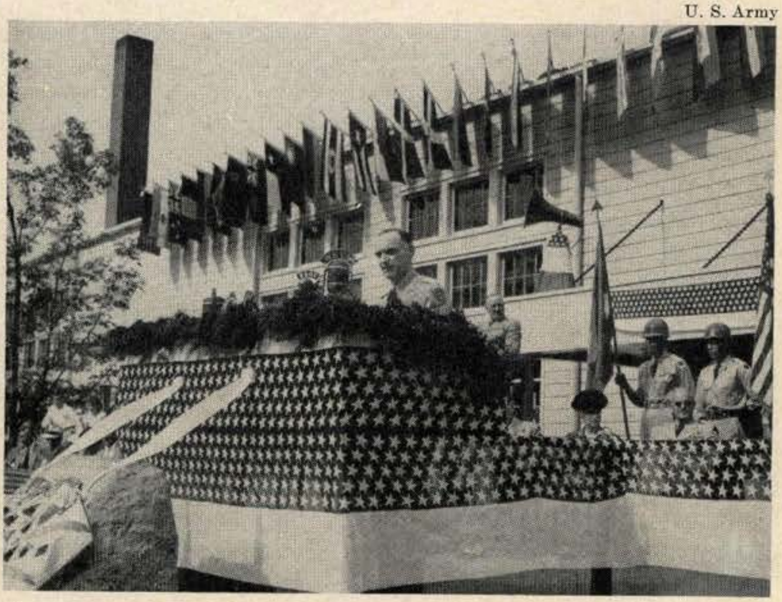
★ ★ ★ ★

IT WAS THROUGH THE INITIATIVE OF GENERAL PATTON THAT THIS UNIQUE COLLECTION OF MILITARY TROPHIES WAS ESTABLISHED TO BE A SOURCE OF KNOWLEDGE TO STUDENTS OF THE ART OF WAR AND AN INSPIRATION TO EVERY CITIZEN

30 MAY 1949

General Lucius D. Clay delivered the principal address.

U. S. Army



CROSS THE RHINE WITH DRY FEET
COURTESY OF 9TH ARM'D DIV.

U. S. Army.

CARDED

Armored Bridgehead Operation

by CAPTAIN JOHN F. HYDE

This article covers the operations of the 9th Armored Division at the Ludendorf Bridge, Remagen, Germany, from the period 7 March to 17 March 1945.

Introduction

THROUGHOUT history, rivers have played important roles in the defense plans of many military forces. The best known and one of the largest of these rivers is the Rhine River in Germany.

The Rhine River flows generally west from Lake Constance, located on the German, Swiss Frontier, for approximately 100 miles along the border between Switzerland and Germany. Then it turns sharply and flows northward for about 320 miles (running a short distance east of the German, French Frontier) and finally it empties into the North Sea.

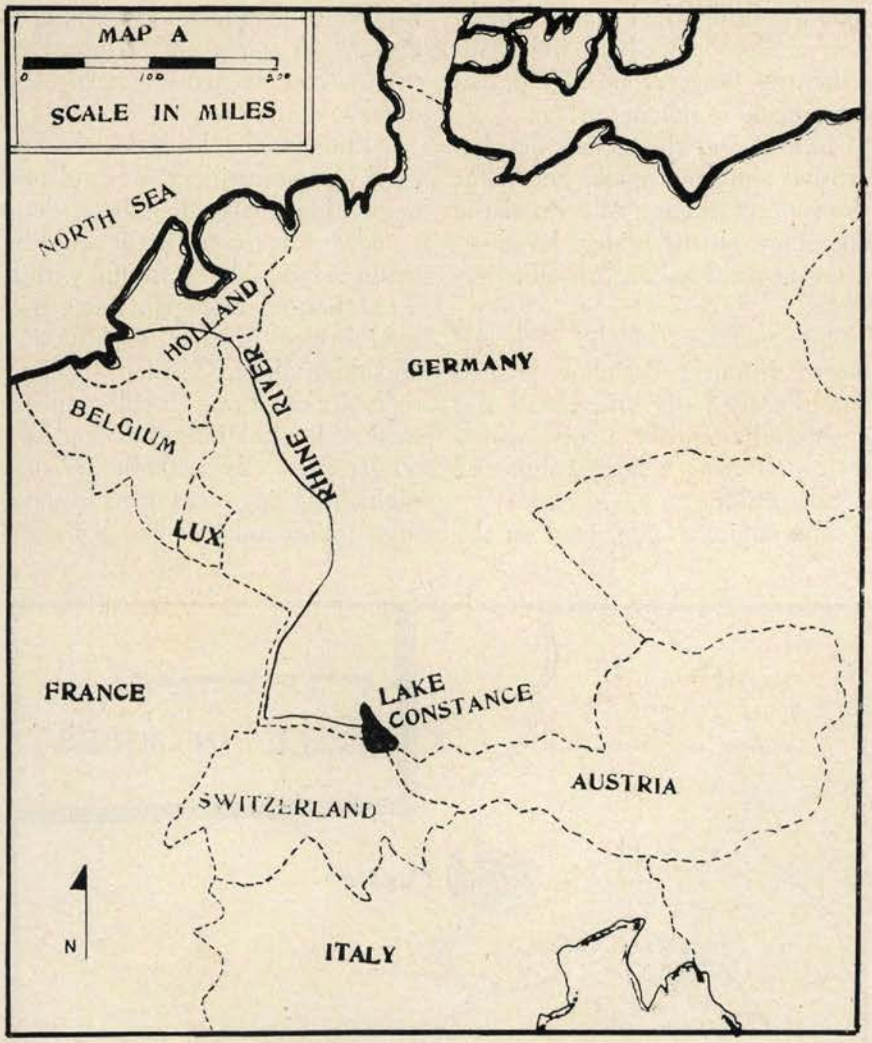
Along the 320-mile northward course of the Rhine the normal width of the river varies from 700 feet to about 1200 feet and in some places it is as wide as 2000 feet. At no place along the northward course can it be forded at any time, even in the low water season. Its width, its swift current and its high, steep banks make it easy to defend, but extremely difficult to cross against resistance.

In the past the Rhine River has

BIOGRAPHICAL SKETCH OF THE AUTHOR

Captain John F. Hyde was integrated into RA 5 July 1946. He served with the 9th Armored Division assigned to the MP platoon from 1943 to deactivation of the Division in 1945, when he was assigned to the 8th Infantry Division and then to Fifth Army Headquarters.

He attended the Advanced Course at the Infantry School, Fort Benning, Georgia in 1948, upon graduation he went overseas to Trieste. At present he is the Provost Marshal of Trieste.



helped to discourage many invaders and would-be conquerors of Germany.

Military Engineers have worked many map problems on crossing the Rhine, usually in selected areas where the river banks and the approaching road nets favor a river crossing. They have agreed, however, that even under favorable conditions the operation would be extremely difficult.

Prior to World War II the only outstanding forced crossing of the Rhine was in 1813 when Napoleon made a crossing in his Russian Campaign. Therefore, it is not surprising that we find the German High Command had again incorporated the Rhine River in its World War II defense plan for the German Homeland.

The General Situation

After stopping the German Ardennes Counter-Offensive, a venture in which the German Military machine had expended a great deal of strength, the early spring of 1945 found the Allied Forces on the offensive. They were advancing very rapidly into Germany against scattered opposition.

The enemy did not appear to be committing any new divisions west of the Rhine, thus indicating that he intended to withdraw to the high ground on the east of the river. It was expected he would destroy all bridges in his wake and take full advantage of the natural barrier which the Rhine offered. It was further expected he would attempt to hold this line at any cost.

The Germans had been falling back rapidly and retreating across the Rhine, taking with them all they could carry. However, the Allied advance was so rapid that the enemy was forced to abandon large amounts of supplies and vehicles.

The enemy was making an all-out attempt to withdraw all of his troops so as to utilize them in the defensive works on the eastern bank. The high, steep banks on the eastern side afforded excellent observation of the river and the western bank, thus giving the defender the advantage.

On the allied side detailed plans were in the making for the breaching of the Rhine River, the last large barrier in the German defense line.

The area selected for this forced crossing of the Rhine River was in the north near the *Ruhr River*. The troops selected for this operation were the Ninth American Army and the Second British Army under the Twenty-first British Army Group. A large number of small naval craft and a vast amount of bridging equipment and matériel had been brought into the vicinity of the planned crossing.

Another detail in the plan for the Rhine Crossing was the clearing of all German resistance from the west bank of the river, leaving the Allied Forces free to work on bridging operations without danger of a possible attack from either flank or the rear.

On 7 March the First U. S. Army, engaged on this mission, was advancing with 3 corps abreast, the III, V, and VII Corps.

The 9th Armored Division, then assigned to the III Corps, was employed on this mission covering the center of the III Corps area. The 1st Infantry Division and the 9th Infantry Division were on the left flank, and the 78th Infantry Division was on the right flank.

The 1st Infantry Division was advancing on the city of Bonn. The 9th Infantry Division was advancing on Bad Godesberg and Burkum, while the 78th Division was advancing on Arhweiler.

The Division Situation

The 9th Armored Division during this phase was assigned the missions to seize Remagen, Germany, and vicinity, to establish crossings over the *Ahr* River (a tributary of the Rhine south of Remagen) and to seize crossings at Bad Neuenahr and Heimersheim. A general mission to seize any bridges over the Rhine remaining in the Division Zone had been given to all troops.

Division Headquarters had ordered Combat Command B to take Remagen, clear it of all enemy and seize the crossing over the Ahr River in the vicinity of Sinzig, Germany.

Combat Command B jumped off with 2 columns abreast, each column advancing on its objectives against light resistance. Many prisoners were taken. It was the division policy to interrogate and process prisoners of war at Combat Command Level. Interrogation of a prisoner at Combat Command B's prisoner of war enclosure revealed at 1515 hours on 7 March that the Ludendorf Railroad Bridge at Remagen was not to be blown until 1600 hours that day.

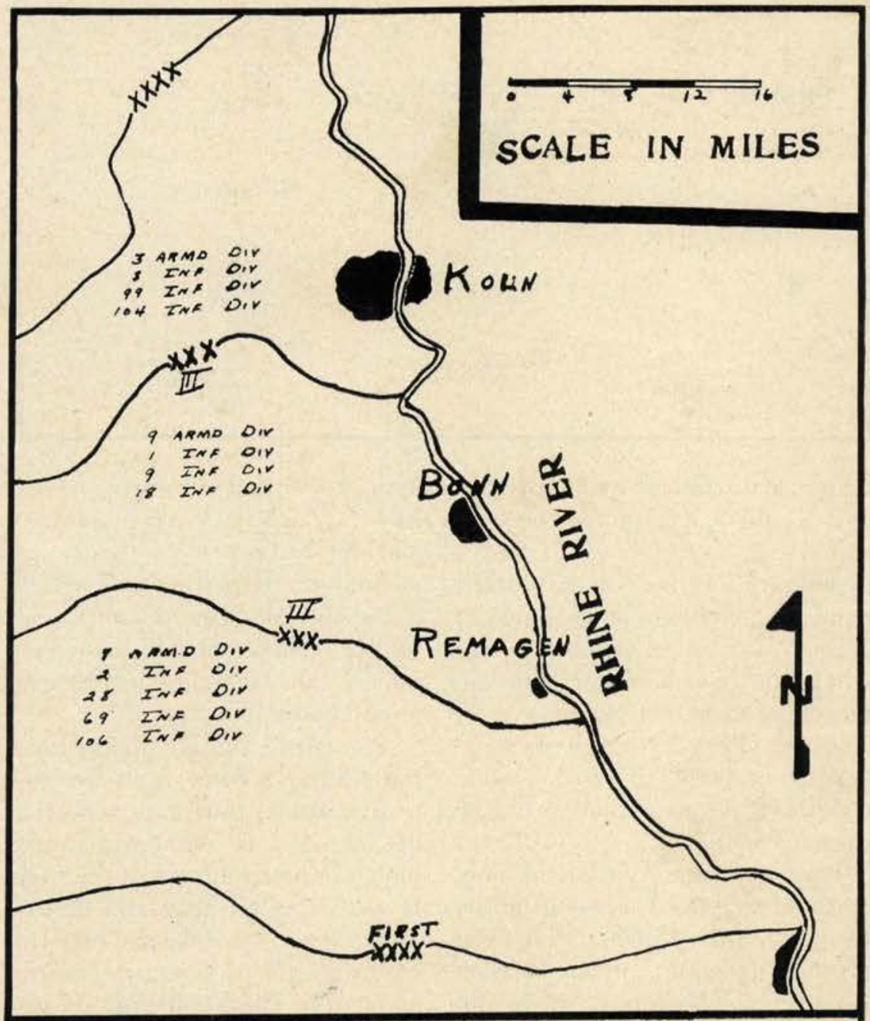
Brigadier General William Hoge, the Commanding General of Combat Command B, immediately upon receiving this information ordered the 14th Tank Battalion, to attack and seize the bridge. His order also specified the use of white phosphorous and smoke around the bridge and the eastern approach to the bridge. In addition this area was covered with machine-gun and tank cannon fire. Demolition wires, fuses and explosives were to be neutralized by Company B of the 9th Engineer Battalion. The Engineers were also instructed to make a report on the railroad bridge as to its serviceability for vehicular traffic. At 1535 hours a force made up of B Company of the 9th Armored Engineer Battalion and elements of the 27th Armored Infantry Battalion started across the bridge. One sharp explosion had occurred near the center of the bridge, but the charge apparently wasn't heavy enough to completely destroy the span. All wires in sight were cut as the party advanced across the bridge. Hasty examination showed that the bridge had many demolition charges placed on important structures; however, no attempt had been made to detonate them.

Throughout this action division artillery units laid smoke on the far shore in an attempt to conceal the operations on the bridge, however, a strong wind reduced its effectiveness.

The members of the 27th Armored Infantry Battalion pushed out to extend the bridgehead and engage the enemy troops which were delivering a large volume of small-arms fire.

The engineers remained on the bridge to complete the cutting of demolition wires and removal of mines, and started to repair the damage done.

Although the bridge had been hit by some artillery fire and one demolition charge had been detonated, it was found that it could be made serviceable for traffic within a few hours. The span was a railroad bridge of steel construction and although the Germans had partially decked it over, it still required some additional timbers to be placed on its floor. By 2400 hours that night the bridge was open to some light traffic and by 0400 hours on



MAP B
CORPS BOUNDARIES & TROOPS
LIST OF FIRST U S ARMY ON
7 MARCH 1945

the morning of 8 March it was reinforced enough to hold tanks and tank destroyers.

In the meantime additional engineers were detached from Combat Command R and ordered to the area to aid in maintaining the bridge and its approaches.

Meanwhile upon confirmation of the capture of this installation, the Chief of Staff of the 9th Armored Division, called the Chief of Staff of the III Corps, and notified him of the capture of the bridge. The III Corps Headquarters ordered the 47th Infantry of the 9th Infantry Division and the 311th Regimental Combat Team of the 78th Infantry Division to be motorized and moved to the bridgehead area to be attached to Combat Command B. Combat Command B engaged the enemy on the eastern bank. The news of the capture of the bridge went back through official channels to General Eisenhower. He ordered 5 divisions to be committed to the bridgehead without delay.

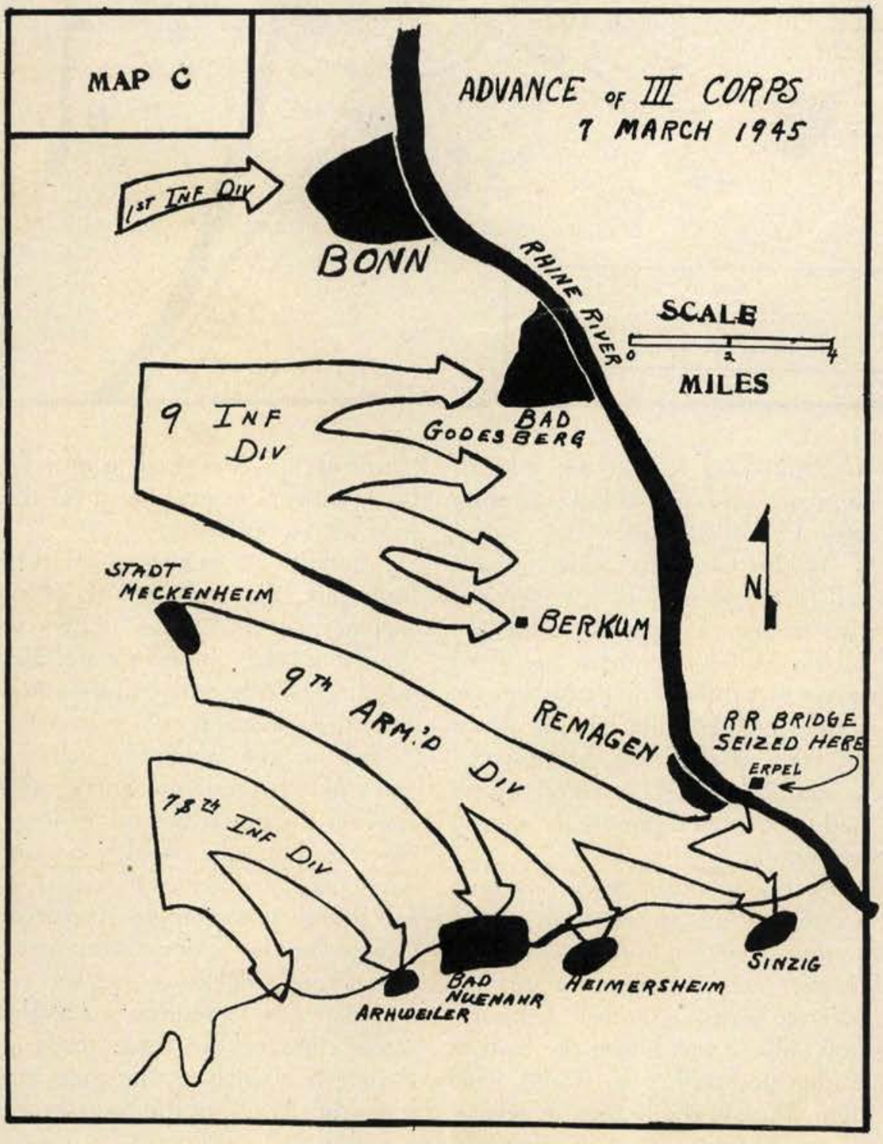
The two remaining Combat Commands of the 9th Armored Division were stripped of many of their combat units, which were attached to Combat Command B and committed as rapidly as they could get across the river.

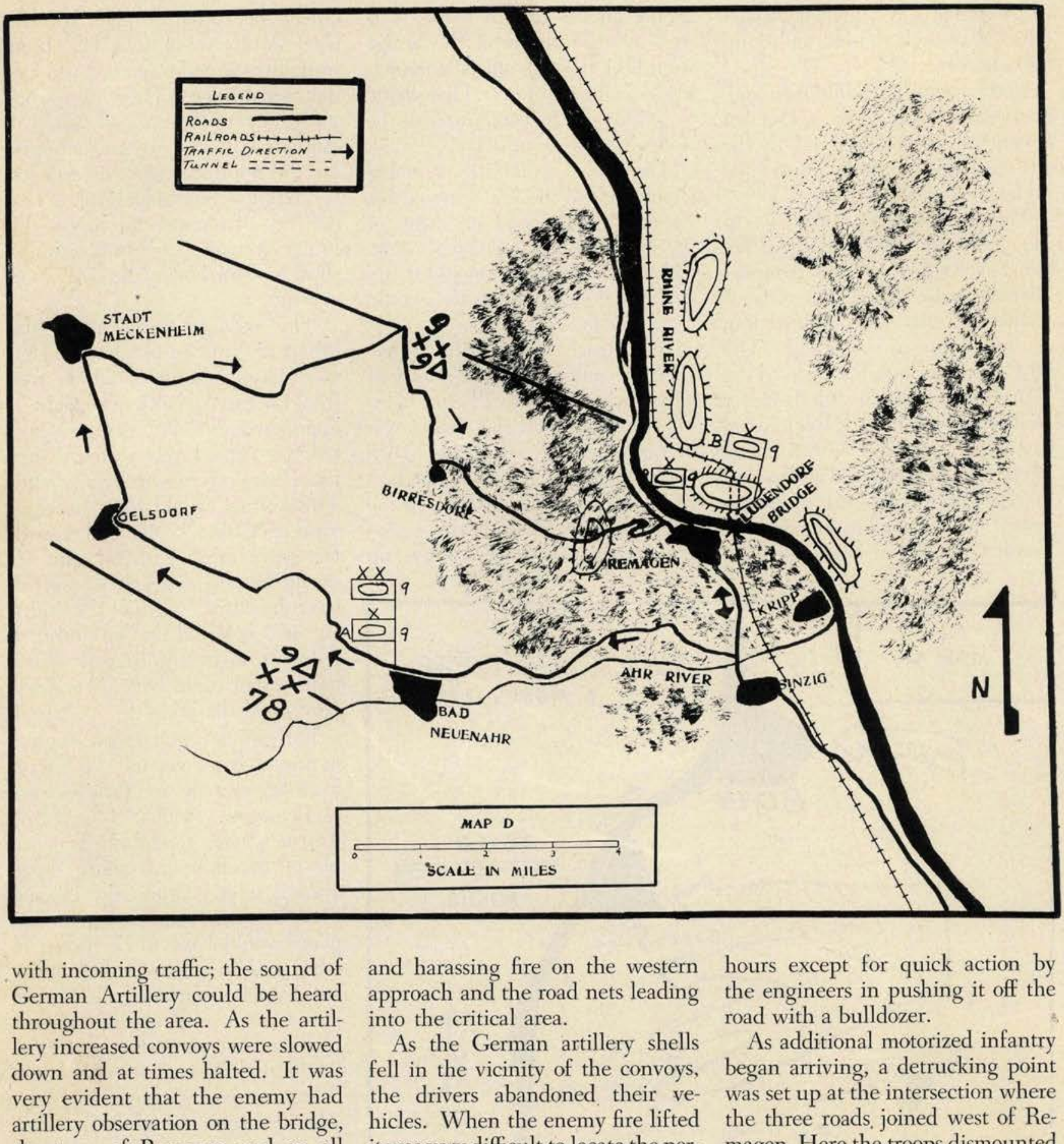
In the early hours of the bridgehead the action consisted mostly of very fierce close-in small-arms fighting, during which the enemy was successfully driven farther back from the bridge. However, the lack of infantry was a drawback to the attacking force. During this period the enemy troops were made up chiefly of Engineer and Anti-aircraft Artillerymen who had been initially assigned to protect the Ludendorf Bridge. They were supported by well implaced 20 MM Anti-aircraft weapons and mortars, but did not have sufficient strength to contain the bridgehead. The delivery of mortar fire upon the bridge was effective, but within a short time the enemy positions were overrun.

The railroad tracks across the bridge ran into a tunnel at the base of a large mountain, which rose from the eastern bank to a height of approximately 190 meters. This railroad tunnel was searched and found void of any heavy weapons. This tunnel would have been an ideal spot for a heavy caliber artillery piece or an anti-tank gun. It would have had a field of fire almost the entire length of the bridge and it is believed that an anti-tank gun dug in or sandbagged within that tunnel could have denied our crossing of the bridge.

Early on 8 March troops assigned to reinforce and expand the bridgehead began arriving in the vicinity of Remagen. At first the existing road nets were thought to be capable of handling this traffic; however, it soon became very evident that one-way traffic circulation plans would have to be placed in effect and a rigid traffic control system exercised on all roads leading into Remagen. A paved two-lane highway led into Remagen from the north. The road from the south was also a two-lane paved highway. The road from the west was a two-lane improved gravel road which, it was felt, should be immediately made into a one-way eastbound road. Two-way traffic was to be permitted on both the north and south highways. A westbound route was then posted as follows: South to Sinzig and west through Bad Neuenahr, Gelsdorf to Stadt Meckenheim. Two-way traffic was resumed again west of Stadt Meckenheim.

By this time all roads into Remagen were rapidly being jammed





with incoming traffic; the sound of German Artillery could be heard throughout the area. As the artillery increased convoys were slowed down and at times halted. It was very evident that the enemy had artillery observation on the bridge, the town of Remagen and on all the roads leading into this vicinity. The very high ground in the vicinity of the eastern bridge approach, while aiding the enemy in affording him an excellent observation post, hindered him by shielding most of the bridge from his direct artillery fire. From his defilade position he was unable to depress the muzzles of his weapons to bring fire to bear on the eastern section of the bridge, however, he was able to lay in very effective interdictory and harassing fire on the western approach and the road nets leading into the critical area.

As the German artillery shells fell in the vicinity of the convoys, the drivers abandoned their vehicles. When the enemy fire lifted it was very difficult to locate the personnel and get traffic moving again. In some cases drivers had become casualties and replacement drivers had to be located rapidly in order to keep traffic flowing.

At one point a direct hit was scored on an ammunition truck, setting it on fire and blocking one of the main arteries of traffic for several hours. Another ammunition vehicle was hit on the eastern bridge approach and would have denied use of the bridge for several hours except for quick action by the engineers in pushing it off the road with a bulldozer.

As additional motorized infantry began arriving, a detrucking point was set up at the intersection where the three roads joined west of Remagen. Here the troops dismounted and the prisoners of war were loaded on the returning vehicles and routed south to Sinzig and west on the one-way road as designated in the traffic circulation plan. This plan worked well with few exceptions. For example, Executive Officers of the various units arriving at the bridgehead area had received orders to rendezvous at the intersection of the three roads at Remagen (which at that time was undoubtedly one of the busiest road junctions in Germany). One-way eastbound traffic was in effect on the bridge to insure that the maximum number of troops and matériel were moved into the newly gained bridgehead. This meant that commanders who had crossed the bridge to reconnoiter assembly areas could not be permitted to come back across the bridge again with a vehicle. In order to reach the intersection commanders would have to go back approximately 2 miles through the artillery impact area on foot. Most commanders chose to remain on the eastern bank and their troops had to be directed to their designated rendezvous to cross the bridge. To expedite the troop movement mission, General Hoge assigned his Executive Officer the task of establishing traffic control in Remagen.

Meanwhile Division Headquarters had ordered Combat Command R Headquarters to set up in Remagen and to supervise the movement of troops to the bridgehead area.

Division Headquarters and Combat Command A Headquarters moved to Bad Neuenahr where they set up administratively to await further developments.

On 9 March a marshalling yard was put into operation on the eastern bank to assist in sorting out the vehicles of the various units. This consisted of a large field which had been divided into many lanes. One of these lanes was designated for the vehicles of each unit known to be operating in the area. All traffic was directed through a traffic control station and drivers who were lost or separated from their units were sent to the marshalling yard. Once in the marshalling field these vehicles were diverted into the lanes assigned to their units. The units were notified and requested to send a guide to escort them to their proper organizational assembly areas. When personnel was available and the exact location of the parent unit was known an escort was furnished for these vehicles by the traffic control personnel. This aided materially in that it prohibited drivers of straggler vehicles from wandering aimlessly up and down the highway, blocking traffic when they attempted to secure information as to the location of their organizations.

The weather generally favored the operation by being cold and rainy, with low hanging clouds which reduced the effectiveness of the German Air Corps against this vital target.

Very early in the operation it was seen that additional bridges would be needed, as traffic was piling up and back-logging on all roads leading to the bridgehead to an extent where vehicles were lined up bumper to bumper for many miles and though vehicles were pouring in on three roads, they had to be infiltrated out on one road leading across the bridge. In addition, vehicles were coming up in close column and when reaching the bridge they had to be extended out to allow a 75-yard safety load interval between vehicles. This was due to the weakened condition of the bridge and the intense amount of enemy artillery fire being placed upon the area.

With the rapid increase of vehicular traffic the requirements increased for trained traffic control personnel. A call to Division Headquarters made by the Traffic Control Officer resulted in members of the Division Band being dispatched to Remagen to aid in traffic control work. These men were sincere and attempted to carry out the task assigned them, but they were not trained in traffic control and in several instances their best efforts only ended in causing severe traffic jams.

As the weather cleared the German Luftwaffe finally showed its hand by sending dive bombers into what turned out to be suicidal runs in attempts to knock out the bridge. A few of these planes scored hits on the bridge, denying use of it for short periods. The bridge engineer maintenance personnel rapidly repaired the damage. Company C of the Division Engineer Battalion, was able to make sufficient repairs to enable traffic to continue its flow with a minimum amount of delay.

In order to reduce the number of vehicles and personnel from piling up in the impact area during these halts it became necessary to draw radio equipped vehicles from the 9th Armored Division's 89th Armored Reconnaissance Squadron, to work in conjunction with the traffic control section. The SCR 536 radio hand set which the traffic control section attempted to use for communication between traffic posts became useless with the amount of interference caused by extremely large number of vehicles passing through this area.

As the shelling became intense these radio vehicles working in the bridge area would inform other radio vehicles stationed at key points along the route of advance. When necessary, incoming columns were halted at these outposts. To some extent this alleviated the congestion and undoubtedly did save the loss of vehicles and personnel.

In addition a SCR 399 radio was set up at the bridge site. This worked in conjunction with a similar type radio at Division G-4 Traffic Control Office which in coordination with III Corps Headquarters allotted all priorities to incoming columns. These priorities were continually changing as the need for different types of equipment became acute in the bridgehead area. For instance, in the early part of the operation engineering and bridging matériel were given top priority. This meant Divisional Military Police Motorized Patrols would screen the motor columns for vehicles carrying the engineer equipment specified and when they found this equipment they double banked the column and brought the engineer equipment to the area needed. This priority was changed from time to time, shifting from engineer matériel, to personnel, to ammunition and to medical supplies; depending on the special needs and requirements of the operation. This procedure was enforced throughout the entire operation and worked very well.

An army bridge unit arrived in Remagen on 8 March to start construction on the additional bridge which had been asked for. A bridge site was selected approximately 500 yards north of the railroad bridge and work was started in the face of strong artillery fire. The German Artillery was well zeroed in by this time and the engineer casualties ran high in equipment and personnel. The fire was so intense and so accurate that their effective work value was greatly reduced. It was decided to begin work on another bridge in the vicinity of Kripp, some 5 kilometers south of Remagen, where the artillery fire was less intense. A second bridge unit was assigned this task.

To best describe a typical day at Remagen the following extract taken from a journal kept by the III Corps Engineer Section for 10 March 1945, tells the story very completely:

> 100001-100300-All work discontinued at all sites due to enemy artillery action. Raking fire of several guns was sweeping treadway construction area. Great deal of air burst artillery shells being used. Appeared to be direct fire with close-in observation. One compressor and two cranes knocked out; 20 floats completely assembled with tread attached were hit, which required that they be removed from the water, disassembled and patched. (This means that 312 feet additional bridging will have to be constructed and a delay in the progress of the bridge of about 5 hours.)
>
> 100300-101205-Enemy artillery continues interdicting railway bridge with observed artillery fire approximately one round every 30 seconds on west abutment and west tower. Infantry crossing on foot having large number of casualties.
>
> 101205-Work stopped by enemy observed artillery fire. Railway bridge and west tower and abutment and approach catching hell. One round of heavy stuff every 5 minutes on treadway site.
>
> 101225-Railway bridge bombed and strafed.
>
> 101230-Enemy artillery scored direct hit on treadway bridge at west end. 15 floats ruined. Going ahead and bridge to far shore as treads are holding damaged portion in place. Damaged floats will be replaced when bridge has been completed. One Brockway knocked out.
>
> 101400-The 9th Infantry Division gave us information that all enemy OP's were being smoked by the Artillery and that rope supplies were at west approach of treadway bridge. Ferry site Number 3 ready for foot troops. Seven LCVP's available.
>
> 101500-Artillery representatives called at CP. Sent message to Army Engineer for additional pontoon and treadway material for reserve.
>
> 101545-101730-Bombed and strafed.
>
> 101600-Pontoon bridge started.
>
> 101710-Treadway bridge reached far shore. Total length, 1032 feet. 17 casualties for the day and 3 air compressors.
>
> 101830-Bombed. Had 6 rounds of heavy artillery at pontoon bridge site. Continuous shelling of west bridge approach.

The next problem which presented itself was safeguarding that which had already been gained. The air assault was increasing in fierceness. The latest type of German jet propelled airplanes were being used on this mission. The American Air Corps kept air cover over the bridgehead during the hours of daylight and within a few days time a total of 9 anti-aircraft automatic weapon battalions and 4 anti-aircraft gun battalions had been brought in and implaced around the bridge site. In spite of all this protection enemy bombers still came in. During the first 8 days a total of 368 aircraft attacked the bridge. Out of this number 96 were destroyed and 29 badly damaged. Many of these dive bombers went into their dive only to meet a sheer curtain of fire and never came out of the dive, but plunged straight into the river. One barely missed the bridge by a few yards. He apparently was attempting to crash

U.S. Army

Evacuating Civilians from Remagen.

U.S. Army

Engineers Repair Shelling Damage to the Bridge.

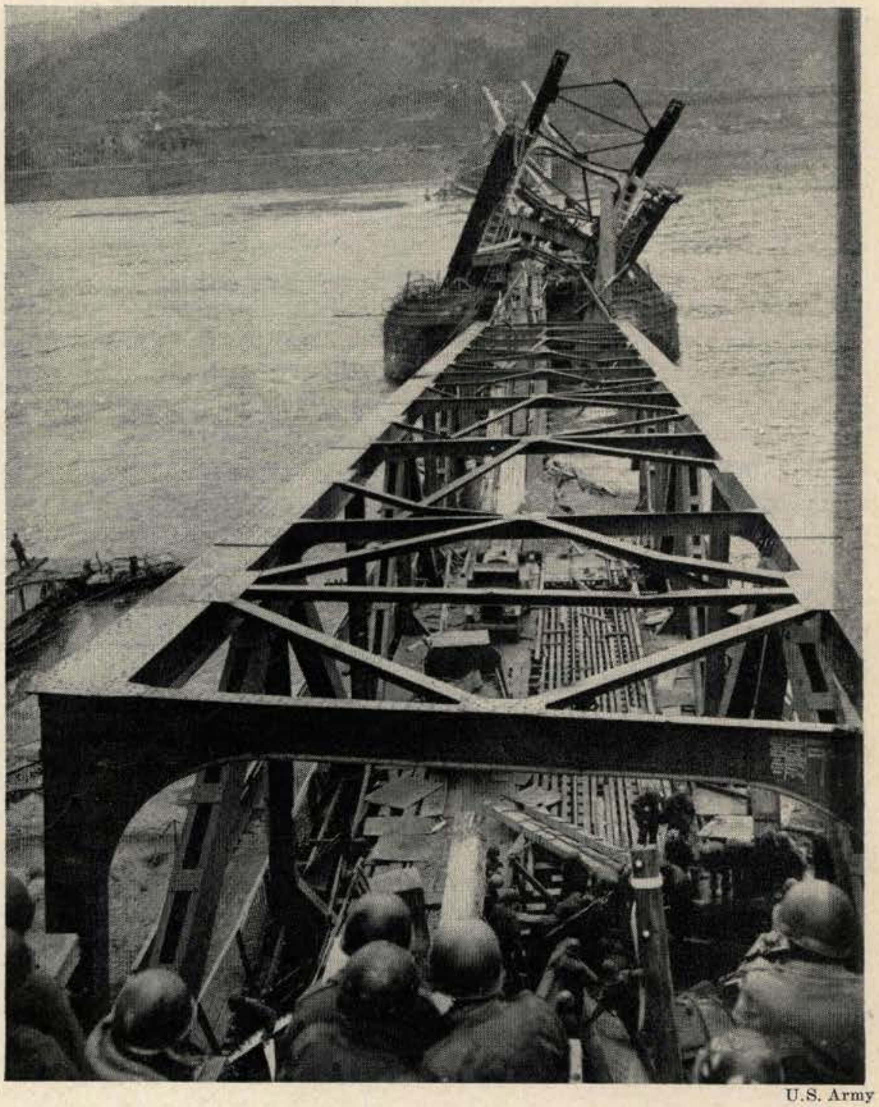
into it after realizing he was hit.

It became Standard Operating Procedure for all personnel to open fire on all low flying aircraft in the area. They employed all weapons available, including vehicle mounted machine guns, anti-aircraft battalion automatic weapons and individual arms. This was effective even though a very large amount of ammunition was wasted. Very few aircraft were able to complete a bombing run on the bridge. The main drawback to this type of firing was that a number of our own troops were hit by wild shots and falling anti-aircraft flak.

The enemy also employed V-2 rockets in an attempt to knock out the bridge. This was the first time the Germans had used the V-2 Rocket Bombs against a tactical pinpoint target. Many landed in the vicinity of the bridge but fortunately none hit their objective.

Machine gun outposts along the banks were on 24-hour a day alert. Fire from high velocity guns at any suspicious items floating in the river was available on request.

Large strong searchlights mounted on tanks lighted sections of the river all throughout the night to aid in detecting any water borne attempts to destroy the bridge.


U.S. Army

Medics Searching for Survivors—400 men were on the bridge when it collapsed, 17 March 1945.

Engineer troops next constructed anti-mine nets and contact log booms which ran the entire width of the river. This was done in order to prevent the enemy from floating demolitions down with the current to the bridge area. Small craft patrolled the stream above the bridge and dropped depth charges at the rate of 12 per hour in an attempt to discourage enemy underwater craft. Although the enemy did not attempt to attack the bridge by the use of underwater craft, an attempt was made by SS "Gamm-Swimmers" or "human sharks" (as they were called) dressed in special rubber suits swimming downstream pushing demolition charges on small rafts. It is believed that the concussion caused by dropping depth charges forced the swimmers to remain on the surface where they were spotted by the observation post and taken under fire. Of the seven swimmers known to have attempted this task none were successful in the accomplishment of their mission and all were either killed or captured except one who was able to make an escape.

All German civilians were evacuated from the area of operation for further security measures.

A river ferry system was placed in operation and all ammunition and gasoline trucks were required to be ferried across the river in order to prevent any additional damage to the bridge. These same barges were used on the return trips to the west bank to evacuate casualties.

By 11 March a heavy 40-ton pontoon bridge, 1032 feet long, was completed at Remagen. (It had a holding it against the strong current.) This meant that we should have been able to pass an average of 300 vehicles an hour over the two bridges, however, due to the extremely poor roads available to us on the eastern bank we found we were barely able to average 100 vehicles an hour per bridge.

On the same day a 25-ton pontoon bridge was completed in the vicinity of Kripp. This bridge was 969 feet long and a large amount of our wheeled vehicle traffic was diverted to cross in this area.

The bridgehead was rapidly being expanded and exploited by this time. It seemed pretty much of a race, with the Allied Forces pushing to get as much men and matériel across the Rhine and into the noticeable upstream bow to aid in fight. On the other hand the enemy was making a desperate effort to reinforce his troops already engaged in the fight. Although we had air superiority, enemy convoys were said to be coming up at night using lights.

A large increase in the amount of enemy armor was noticed. A marked difference was also noticed in the type of prisoners being taken. At an earlier date the prisoners were made up mostly of Service Troops, engineers and anti-aircraft artillerymen but now members of the 3rd Parachute Division, the 11th Panzer Division and other crack Wehrmacht Units were identified in our prisoner of war enclosures.

One of the main objectives for the Allied Troops was to cut the *Autobahn* Highway 7 miles east of Remagen and thereby deprive the enemy of this four-lane highway in his efforts to shift his troops.

This was accomplished only after some of the fiercest enemy resistance encountered during the operation was subdued. In order to further delay enemy reinforcements from reaching their destination in time, supporting artillery units delivered heavy interdictory fire on key points of all road nets.

The support given to this operation by the air force was of tremendous value. They had bombed railroads, bridges, highways and very effectively aided in the attempt to isolate the battlefield.

The Germans had sufficient tactical reserve to defend their position; however, they concentrated farther to the north to meet the expected Rhine River crossing in the vicinity of the Rhur River.

Although the enemy was fighting savagely and desperately, its strongest efforts to contain the bridgehead failed due to his inability to get sufficient forces to the points where they were urgently needed.

Analysis and Criticism

After making a study of this operation it is my opinion that our lack of ready tactical reserve was one of the greatest drawbacks to the operation. Although the capture of the Ludendorf intact was more than we had hoped for, the fact still remains that the bridge was known to be standing and in usable condition the day before its capture. While it was only a wild hope, its capture was one of our capabilities. We should have had tentative plans made and a tactical reserve set aside to exploit the bridgehead in the event of the successful capture of the bridge. Had this been done it would have been possible to exploit the bridgehead much more rapidly.

The initial lack of radio communication in the traffic section resulted in the loss of a large amount of personnel and matériel. The effectiveness of this section was greatly reduced because an individual on one traffic post had no idea of what was happening or the conditions existing on another post. If radios had been provided at the start of the operation we could have moved traffic much more efficiently and could have prevented traffic from entering danger zones during the periods of heavy shelling.

The policy of unit Commanding Officers picking a road junction on a map as a rendezvous point without knowing the existing situation worked a hardship on the individuals who were presently located in the area.

The attempt to erect a pontoon bridge within 500 yards of the Ludendorf Bridge meant the same artillery pieces firing on the railroad bridge could also deliver fire into the new bridge construction area without having to shift the guns and could also use the same observation posts.

The fact that our reinforcements were arriving piecemeal instead of arriving with unit integrity, meant that peak efficiency could not be hoped for.

It has been estimated that the capture of the Ludendorf Bridge shortened the war in Europe and reduced the casualty toll. A vast saving in matériel and equipment was realized by not being forced to make a deliberate river crossing.

Many German Staff Officers stated, after their capture, that they believed the capture of the bridge at Remagen was a turning point of the war in that it did break the last and strongest link in the German line of defense.

A great deal of credit is due Combat Command B for the manner and speed with which it exploited an enemy weakness once it was found. After learning that the Ludendorf Bridge was still intact, the command advanced across the bridge so rapidly that even though it was prepared for destruction, the enemy was not able to destroy it.

The protective measures taken were well worth the time and effort spent. In the early stages of the operation many officers did not realize the value of the work accomplished by the engineers in stringing log contact booms across the river and the work of patrolling the river in boats. As a direct result of this work one known water borne attack was broken up, and possible other contemplated attacks were discouraged.

In employing the V-2 Rocket, the enemy was using a weapon which had worked extremely well against large area targets. On the Ludendorf Bridge he was firing at a pin-point target and it proved quite ineffective.

The employment of individual small arms against attacking aircraft, while in itself not devastating against the enemy air, it did have a psychological value to our troops in that they felt they were doing something to protect themselves.

The use of medium and heavy corps artillery to aid the air corps in isolating the battlefield proved to be a valuable aid within the range capabilities of their weapons. With their air observation and forward observers they were able to bring fire to bear on small bridges and other small objects that would be

(Continued on page 48)

AN ATLAS OF IGNORANCE:

A Needed Stimulus to Honest Thinking and Hard Work

by S. WHITTEMORE BOGGS

The following is a talk given before the American Philosophical Society several months ago. It was published in the proceedings of the society—Vol. 93, on 3 June 1949. We are reprinting it because of its relation to President Truman's Point Four and the significance of the subject to the Military.

NO accurate, reliable map of the world has ever been made, and none is yet possible. All world maps and encyclopedic compendiums of knowledge gloss over vast areas of geographical ignorance because, in every field of mappable knowledge, there are millions of square miles concerning which information is a complete blank or extremely inadequate.

"Mappable knowledge," as we are using the term, embraces all fields in which the data are "heavily loaded with locality"—to borrow a phrase from Hocking. Not only are latitude and longitude significant, but in some subjects there is a vertical component upward to the limit of the atmosphere and downward to the ocean floor and as far into the earth's crust as we can obtain data. In addition, the fourth dimension, time, is invariably present, whether of the same moment Greenwich mean time as in meteorology, or of the hundreds of millions of years of geological time. The range of subject matter encompasses geology, geodesy, meteorology, terrestrial magnetism, ionosphere studies and other physical sciences; the distributions of every species of plant and animal life, on land and in the sea and air; a great portion of the social sciences; and all of the humanistic studies—history, archaeology, philosophy, religion, languages and all the other manifestations of the human mind and spirit in art, music, and "the art of living." The vast geographical areas of ignorance are of concern to specialists not only in the fields already indicated but also to geographers, ecologists, geophysicists, oceanographers, and others who study interrelations and associations of many sorts.

BIOGRAPHICAL SKETCH OF THE AUTHOR

Samuel Whittemore Boggs was born March 3, 1889 in Coolidge, Kansas. He was educated at Berea College, B.L., 1909; Yale University, 1912-13; Columbia University, A.M., 1924; Honorary Sc.D., 1949, Berea College. He has served in many varied capacities in the field of Geography from teaching to being a member on the U.S. committee to study cartographic problems of the United Nations.

A few of his many publications are:

International Boundaries: A Study of Boundary Functions and Problems, Columbia Press, 1940; "American Contributions to Geographical Knowledge of the Central Pacific," in Geographical Review, April 1940; "Mapping the Changing World: Suggested Developments in Maps," in Annals of the Association of American Geographers, June 1941; "Africa: Maps and Man," in Vital Speeches of the Day, November 1, 1943; "Mapping Some Effects of Science on Human Relations," in Scientific Monthly, July 1945; "Cartohypnosis," in Department of State Bulletin December 22, 1946 and in Scientific Monthly, June 1947 and many others.

At present he is Special Adviser on Geography, U. S. Department of State.

In using well-made maps there is often a delusion of adequacy and completeness. "Cartohypnosis," or hypnotism by cartography, arises in part because a map is almost never accompanied by a "relative reliability diagram" which, like an x-ray, reveals the underlying structure of compilation data. For example, there are many maps showing land heights and ocean depths all over the world; but few maps disclose the areas that have been topographically mapped by governments, in varying degrees of accuracy, which cover only about one-tenth of the earth's 55,000,000 sq. mi. of land surface.

Every regional blank spot in the sum total of the world's specialized knowledge on any subject is an "area of ignorance." The gaps can be filled only through observation on the spot by competent specialists. The indigenes of Indochina may well know the "feeble stings" of "clouds of cumbrous gnats"; but unless competent entomologists have studied the insects of the region and recorded their findings it is an area of entomological ignorance. As we are using the term a region is an "area of ignorance" if the total library resources of the outside world do not cover it—if, for example, in regard to history, protracted study in the region itself is essential, seeking manuscripts, inscriptions and artifact and questioning those best informed. If in any region an "iron curtain" were to hide from the rest of the world the knowledge of its able specialists, the areas they know well would be, not areas of ignorance, but of shrouded knowledge.

The southern hemisphere is in most respects the least known half of the world. This is natural because, on its one-quarter of the earth's land area (excluding the Greenland and Antarctic icecaps) less than ten per cent of the world's population lives. Relatively little is known of the marine biology, the currents and properties of the waters and the meteorology of the 79,000,000 sq. mi. of oceans of the southern hemisphere, which include large stormy, ice-infested seas surrounding the 6,000,000 sq. mi. of Antarctica[1] that deflect from great circle routes the trickle of commerce of Australia and New Zealand that passes around Cape Horn and the Cape of Good Hope.

The areas of known ignorance are in a certain sense increasing. New fields of mappable knowledge are being developed by science and technology. Mapping of ionosphere phenomena, for example, has become very important in making predictions for radio communication. Radioactivity of certain minerals affords invaluable clues to the age of geological formations and of the earth itself. Advances in biology call for mapping the geographical distribution of the widely divergent frequencies of the blood groups in human beings.

Seriousness of the Situation

Is this statement of ignorance of large parts of the world a matter of any concern? Won't the mapping of the world take care of itself when people need the information? Is it not sufficient to recall that, although no man ever saw, during a lifetime, more than a small fraction of one per cent of the earth's surface, succeeding generations of mankind have been recording their observations upon paper for many centuries, and that a few men have manifested sufficient curiosity, at least from the time of Eratosthenes, to piece together the total results on a map in an endeavor to obtain a mental image of the whole world on which they lived? There are compelling reasons, however, why we dare not complacently assume that adequate world-wide coverage of information on many subjects has not already become an urgent matter.

For the first time in history there are world problems. At the time of the foundation of the American Philosophical Society by Benjamin Franklin in 1743 nobody dreamed of the possibility that they would ever arise. And until the emergence of world problems the preparation of world maps on any subject was of little more than academic interest. The aggregate of the world's knowledge in many fields, however, is insufficient even for present world operations. Thus the Secretary General of the United Nations, in his third annual report, notes that the "regional bodies and other economic commissions of the Council have encountered vast gaps in the knowledge of economic conditions in many parts of the world," and he added, "Without reliable data, reliable planning is, of course, impossible, whether it be national, regional or world planning." There is earnest need of honest thinking in global terms, a prerequisite for which is effective global coverage of data in many fields of knowledge.

A second reason for concern is that, until there is an intelligent, concerted effort to fill in the principal gaps in the knowledge of the world and its resources and peoples, and to integrate it with the great body of knowledge already accumulated, each nation will have no choice but to formulate its policy in relation to the rest of the world on the basis of its own peculiar fraction of the inadequate sum total of world knowledge. It seems tragic that each nation therefore tends to rely to a considerable degree upon bits of information regarding foreign areas that are gleaned from roundabout sources. Each nation is inclined to assign to such data greater significance than to the broad facts of encyclopedic character that are now available, among which they would be found if we already had good world coverage in all the principal fields of mappable knowledge.

World problems are the concern of the United Nations and the specialized agencies and of other international organizations: food and agriculture, health, aviation, telecommunications, meteorology, the world bank operations, and all the rest. These world problems have arisen because world-wide human relations have been transformed in a generation or two by technology founded on science. In a world full of folks who want to live in peace with one another and haven't learned how, there is special need to stress studies in the humanities and the social sciences. Knowledge of the unity of individual communities and cultures, and of all men live by and for, seen in their peculiar geographical and historical settings, can contribute much to an understanding and to the solution of some of the world problems. And with the world's population increasing at a rate of perhaps 50,000 each day, the tragic squandering of non-renewable natural resources constitutes a world problem demanding concerted action. Rugged individualism and ruthless exploitation may beget ragged posterity. In attempting to solve world problems, accurate statistical summaries by nations are sometimes irrelevant and deceiving; people and resources and production are not neatly focused at points, nor uniformly distributed within frontiers for political convenience. Detailed, reliable geographical distributions are essential factors needed in solving these problems.

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[1] There is much hazy thinking (or at least talk) about Antarctica, especially regarding mineral resources. It should be remembered that only a few points on the Antarctic coast are accessible to surface ships (and those only precariously for a few weeks each year, some of them only with the aid of icebreakers). Taking into account its remoteness from all industrialized areas, the improbability that railroads will be built to any mines one might wish to develop in the interior of the continent, the intense cold, and the need of transporting all labor forces and all their supplies, one may begin to realize how much more fabulously rich must be the concentrations of any minerals in Antarctica if they are to compete with the resources of other continents. But when one grasps the real significance of the central role which Antarctica plays in meteorology, terrestrial magnetism, ionosphere phenomena—all of which vitally affect mankind over the whole earth, in agriculture, shipping, telecommunications and other activities—one need not be surprise or disappointed if the only export from Antarctica in the next half century, at least, should prove to be the great wealth of scientific data that can be had only in its forbidding wastes, which may richly repay all the effort entailed in obtaining it.

Meteorology affords a good example of the need of world coverage. The importance of weather prediction for aviation, shipping, agriculture and other purposes is acknowledged. The most competent meteorologists say that we haven't even scratched the surface of meteorology on a world scale, and that little improvement in weather prediction can be made until some of the major world meteorological problems are solved. Sampling techniques, in weather as in election forecasts, may be misleading unless they are truly representative of the entire field. The atmosphere weighs nearly one millionth as much as the solid earth, and several billion tons of air shift across the equator twice a year—the total mass apparently varying appreciably from year to year. A great deal must be studied about the equatorial belt and both polar regions, and much that lies between especially in the southern hemisphere. The Antarctic continent, with a polar plateau two miles high, and supposed to have an average elevation above sea level perhaps twice that of Asia—(the effect upon that supposed average of the area which has never been seen by man, which is larger than the United States, is, of course, unknown)—exerts an extraordinary effect upon the weather thousands of miles away; the aerodynamic balance well north of the equator seems to be seriously disturbed much more in some years than in others.

Geophysicists say that in regard to terrestrial magnetism, geology, physical oceanography and all the other fields of physical science that have geographic distribution, the gaps in observation over large areas seriously diminish the effectiveness of their calculations and deductions even over the areas where measurements have already been made. The "long-line equivalent value of the ionosphere" is sometimes said to exceed ten billion dollars and, because the number of wireless communication channels that can utilize the ionosphere is limited it is important that the possibilities be used with high efficiency. Million ampere electric currents flow in the high atmosphere in the polar regions during magnetic storms, suggesting the importance of continuing observations in both polar regions. Geology can make new strides when at least several hundred cores are obtained from the bottom of the oceans in widely dispersed points.

Mappable information can be obtained only on the spot, approximately at the particular latitude and longitude at which the map portrays it. It will take a lot of hard work—work that should prove exhilarating —to obtain the needed data from the ends of the earth, and to make out their meaning for our time. The work yet to be done by topographers, geologists, oceanographers, soils scientists, botanists, zoologists, anthropologists, linguists, and many other specialists —in distant fertile valleys, rugged mountains, inhospitable jungles, hot and cold deserts, and throughout all the oceans of the world—constitutes a challenge to the present generation that is much more than a "moral equivalent of war."

Means available for the job today and tomorrow transcend the dreams of the great pioneers in every field of exploration during the eighteenth and nineteenth centuries. Aerial photographs studied stereoscopically, electronic apparatus used in surveying, sonic techniques for deep-sea soundings, automatic recording instruments of many types, punch-card machines to tabulate and to analyze and print the voluminous data obtained in field observations, are revolutionizing the world-ranging operations with which geographers and their ilk are concerned.

Need of an Atlas of Ignorance

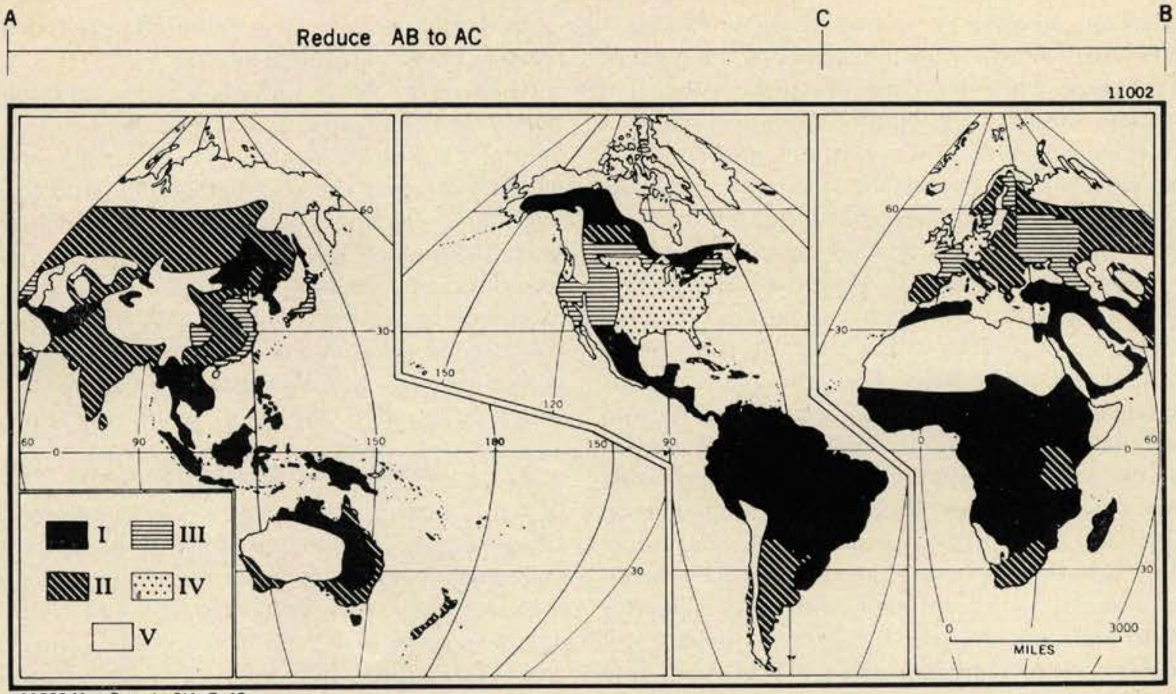
World maps have become a political and social necessity. Really good ones are impossible until vast gaps in regional knowledge have been filled. We should therefore prepare a considerable series of world maps, one or more in each field of mappable knowledge, in order to visualize where field studies are most needed. Publication of at least fifty to one hundred such world maps, in color, should constitute an "atlas of ignorance." Every map would cover the entire earth—in some subjects, of course, only all land areas, in others only all sea areas, and in some both land and sea. Concise accompanying text should indicate unsolved problems and the areas in which field work seems most urgent, and should suggest what should be especially sought out in the areas of relative ignorance.

Such an atlas would be of exceptional value to those who supervise the expenditure of funds available for study and field work in foreign countries, and to individual specialists and graduate students who want to know where they can do the most significant original work and best contribute to the sum of the world's knowledge. This atlas would stimulate more and better field work, and publication of the results.

Furthermore, in order to "improve the common stock of knowledge," we should have a series of volumes in English, of encyclopedic proportions (say twelve to twenty volumes)—comparable to the "Geographie Universelle" or to certain German "handbooks"—treating the entire earth, regionally and systematically. Americans and many others need it in order to understand our changing world. Before such a serious undertaking is initiated it is desirable that adequate data be obtained for the blank and nearly blank areas, and the proposed "atlas of ignorance" is a vital means to that end.

Erudition is required of those who compile these maps of ignorance. Only those mature specialists who, individually or collectively, know the present coverage of the aggregate of human knowledge in one subject, or a selected aspect thereof, can compile one of these maps.

One map appropriate for the "atlas of ignorance"



11002 Map Branch, CIA, 7-48

Map 1. Adequacy of Existing Soil Maps for Agricultural Interpretations.

I. Areas not covered by soil maps, except highly schematic world maps wholly inadequate for agricultural interpretations, and within which soil data are important for agriculture.

II. Areas largely covered by generalized soil maps, inadequate for agricultural interpretation even at a regional level.

III. Areas largely covered by generalized soil maps suitable for agricultural interpretation at a regional level.

IV. Areas largely covered by detailed or semi-detailed soil maps suitable for agricultural interpretation at county (or equivalent) level.

V. Areas within which soil data are not important *for agriculture* except locally.

Compiled in 1946 under the direction of Dr. Charles E. Kellogg, Chief, Division of Soil Survey, Bureau of Plant Industry, U. S. Department of Agriculture.

is here reproduced (without textual discussion).[2] This map, entitled "Adequacy of existing soil maps for agricultural interpretations," prepared on an equal-area projection, was compiled under the direction of one of the most competent soil scientists. It shows in solid black the "areas not covered by soil maps, except highly schematic world maps wholly inadequate for agricultural interpretations, and within which soil data are important for agriculture." In the shaded areas, progressively lighter as the information becomes more adequate, only the lightest shading indicates "areas largely covered by detailed or semi-detailed soil maps suitable for agricultural interpretation at county (or equivalent) level." The areas left white are those within which soil data are not important for agriculture except locally.

A list of thirty subjects that might be included in the "atlas of ignorance" is given below, merely to suggest more clearly the character of the proposed contents. It should be remembered that, in each case, we might appropriately prefix to the listed title a clause equivalent to the following: "*Adequacy and reliability of the present regional coverage of data, on world maps and in encyclopedic compendiums,* relating to . . ." Many of the subjects call for a division into two or more titles.

In the physical sciences:

1. Topographic mapping at scales not smaller than four miles to one inch (1:253,440)—both land and submarine surfaces.
2. Geology—surface rocks.
3. Geology—vertical cross-sections of rock formations (to various depths—disclosed in many types of natural rock exposures, in mine shafts, in cores obtained in drilling wells, etc.).
4. Geology—knowledge as to whether petroleum could or could not occur (covering all land and all continental shelf areas).
5. Mineral resources (other than petroleum).

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[2] Five maps, of which this was the first, three of them in color, were shown by means of lantern slides in the oral presentation of this paper. The second map indicated "adequacy and reliability of world population data," ranging from areas without any modern census, through areas for which there are "nominal censuses" and older or incomplete censuses, up to those areas for which there are recent, accurate censuses.

The third map, compiled with the aid of the U. S. Weather Bureau, indicated the adequacy of present meteorological observations (both surface and upper air) for weather prediction as an aid to aerial navigation. The map covered the entire surface of the earth. The Antarctic continent and the millions of square miles of the Atlantic, Indian and Pacific Oceans south of about 50° south latitude appeared as "no observations" (either surface or upper level). Practically all of the remaining ocean areas south of the equator, plus all of the Indian Ocean and small areas of the Atlantic and Pacific north of the equator, appeared in the category "inadequate surface observations; no upper level observations." The areas of "inadequate surface observations; inadequate upper level observations" included all the remaining ocean areas, all of Africa, much of South America, northern North America, and much of Asia.

6. Soils—knowledge in relation to agricultural possibilities.
7. Underground water; water table, etc.
8. Tides and tidal streams.
9. Ocean currents.
10. Ocean temperatures and salinity, at different depths.
11. Terrestrial magnetism.
12. Ionosphere data (text indicating areas in which further studies are most urgently needed, significance to telecommunications, etc.).
13. Meteorological observations (adequacy of year-round data for periods of years, to ascertain diurnal, seasonal and annual variations in temperature, precipitation, winds, etc.).

In the biological sciences:

14. Distribution of native plants (separate map and text for each of some of the more significant orders or families).
15. Distribution of native animals (separate map and text for each of some of the most significant orders or families).
16. Insect distributions (knowledge of the distribution of the species already known—said to be perhaps 800,000 species—is very incomplete, and it is supposed that the species still unknown may be considerably more numerous).
17. Distribution and kinds of marine fishes.
18. Life histories and ecology of marine fishes; knowledge of the usable marine species of food fishes.
19. Distribution of each of the blood groups in human beings.
20. Distribution of diseases afflicting mankind; medical geography.

In the social sciences and the humanities:

21. Population distribution; vital statistics.
22. History (separate map and text for each of selected dates or periods, e.g., (a) A.D. 1450-1500; (b) A.D. 1000; (c) 600-400 B.C.).
23. Archaeology (the text indicating areas in which little or nothing is known of the possibility of finding archaeological remains, areas in which known remains are in danger of being lost through road construction, building dams or other operations, etc.).
24. Folklore.
25. Languages (several maps—e.g., knowledge of contemporary language structure; knowledge of the history of linguistic development).
26. Form and function of the family.
27. Basic personality structure (knowledge of temperament and personality such as may be disclosed by various psychological tests, etc.).
28. Basic cultural values of peoples—knowledge of the things deemed most significant in life to each group, etc.
29. Political functioning—knowledge of how the society or community as a whole operates in all matters analogous to political functioning in Europe and the Americas.
30. Transportation facilities (including primitive means).

The first edition of the atlas of ignorance could be published probably within two years, at relatively small expense. It would seem unwise to make it a more ambitious or perfectionist production than necessary to get across the main facts about the areas most challenging to the investigator, and the problems demanding attention. It is suggested that encouragement should be given to reproduce the maps in professional periodicals (usually feasible only in black and white), where each would reach the largest number of specialists in a given field. The maps might well also appear in textbooks in order to inform the reader how unequal is the material on which the text for different regions is based.[3]

An Aid to Perspective

We seem to be living in a world and in a universe in which creation is continuous. When we reflect upon how human interdependence on a world scale has evolved so rapidly, as an apparent by-product of science and technology, we may perceive it to be part of what Franklin called "the providence of God in the government of the world." The transformation of human relations is as significant as a transmutation of species. But in the present state of fear and misplaced emphasis upon static concepts of ideologies which, in reality, are evolving the world is suffering, as we have remarked on another occasion[4] from a "crustacean psychosis in an avian age"—manifest in the effort of some societies to develop heavily armored shells for protection.

Because of the wholesomeness of wholeness, patient study of world patterns of distribution and of their interrelations in many fields may exert a most salutary influence upon men's minds. When we can hold a globe in our hands and visualize the interrelationships of complete world patterns of physical and social phenomena we can handle world problems much more intelligently. The increased assurance may help to overcome the "tragedy of the timidity of statesmanship" observed by Mr. Stimson.[5]

The therapeutic effect of viewing simultaneously mankind's current ignorance in the field of the social sciences and the humanities and in the fields of the physical and the biological sciences may be very great. This indirect approach to human problems may be more fruitful than a frontal assault on social and political preconceptions and prejudices. A sense of humility, of proportion, and perhaps of humor as a wholesome relief from the intense seriousness that now pervades all talk about world affairs, might be engendered by wide use of the proposed atlas of ignorance. The fact that such an atlas would arouse the interest of people in every continent should not be overlooked.

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[3] Making one of the color plates, for each atlas map, in graded intensities of dot and ruling patterns and in solid color would make it feasible to combine that one plate with the black plate and thus produce a simple, black and white map adapted to reproduction in periodicals and textbooks.

[4] Boggs, S. W., Mapping some effects of Science on Human Relations, *Sci. Monthly,* 61: 45-50, 1945; see p. 50.

[5] Stimson, Henry L. and McGeorge Bundy, *On Active Service,* 281, New York, Harper, 1948.

This atlas of ignorance would be a vital step toward taking an inventory of all the earth and its tenants. The underdeveloped areas are, on the whole, the darkest areas on the world maps in this atlas. Concerted efforts toward effective employment of our steadily expanding facilities may bring this little earth and its marvelous resources for mankind into perspective that may correct our myopias and lead from rather adolescent notions of "tolerance" to mature concepts of "orchestrated heterogeneity." If peace is to be conceived dynamically, on a scale commensurate with the emerging realities of the present age, we need to develop a society in which all whose minds and hearts are big enough can find their best expression as citizens of the world.[6]

May I add a final word in appreciation of the opportunity of presenting this concept of an atlas of ignorance at a meeting of the American Philosophical Society which was dedicated, more than two centuries ago, to the "increase and diffusion of knowledge among men," and of whose founder it has been said "As truly as any man of his period, he was a citizen of the world."

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[6] The author has tried to explore some of these things with reference to the social sciences, and political science in particular, in an article entitled "Geographic and other scientific techniques for political science" which appeared in the *American Political Science Review*, v. 42, April 1948, pp. 223-238. The title would have been "rounding out political science," better indicating its content, but for the necessity of differentiating it more sharply from another with a similar title.

Armored Bridgehead Operation

(Continued from page 42)

difficult to strike successfully from the air.

Lessons Learned

The lessons emphasized by this operation are:

1. A line of defense, like a chain, is no stronger than its weakest link. By allowing a gap to remain open in the German defense line at Remagen our troops were able to reach across a barrier that in all probability would have delayed them a long time and that would have been very difficult to breach.

2. The need for additional armored infantry in an armored division was seen during the exploitation of the bridgehead. Tank crews cannot be dismounted and massed in sufficient numbers to make up for a shortage of infantry.

3. The effect of observed enemy artillery on an attacker was very clearly seen at Remagen when the enemy had the advantage of holding the high ground on the east bank.

4. To insure efficient cooperation Commanding Officers should be oriented as to the existing situation when possible before being sent into a bridgehead area.

5. When a defended river line has been breached, additional bridges should be erected out of artillery range from the original bridge site, when possible.

6. The need for trained efficient traffic control personnel was shown very strongly when untrained personnel from Division Headquarters were sent to Remagen to aid the traffic section. Although these individuals were sincere and tried to carry out tasks assigned them, their lack of experience was a great handicap to them, thereby reducing their aid to the traffic section.

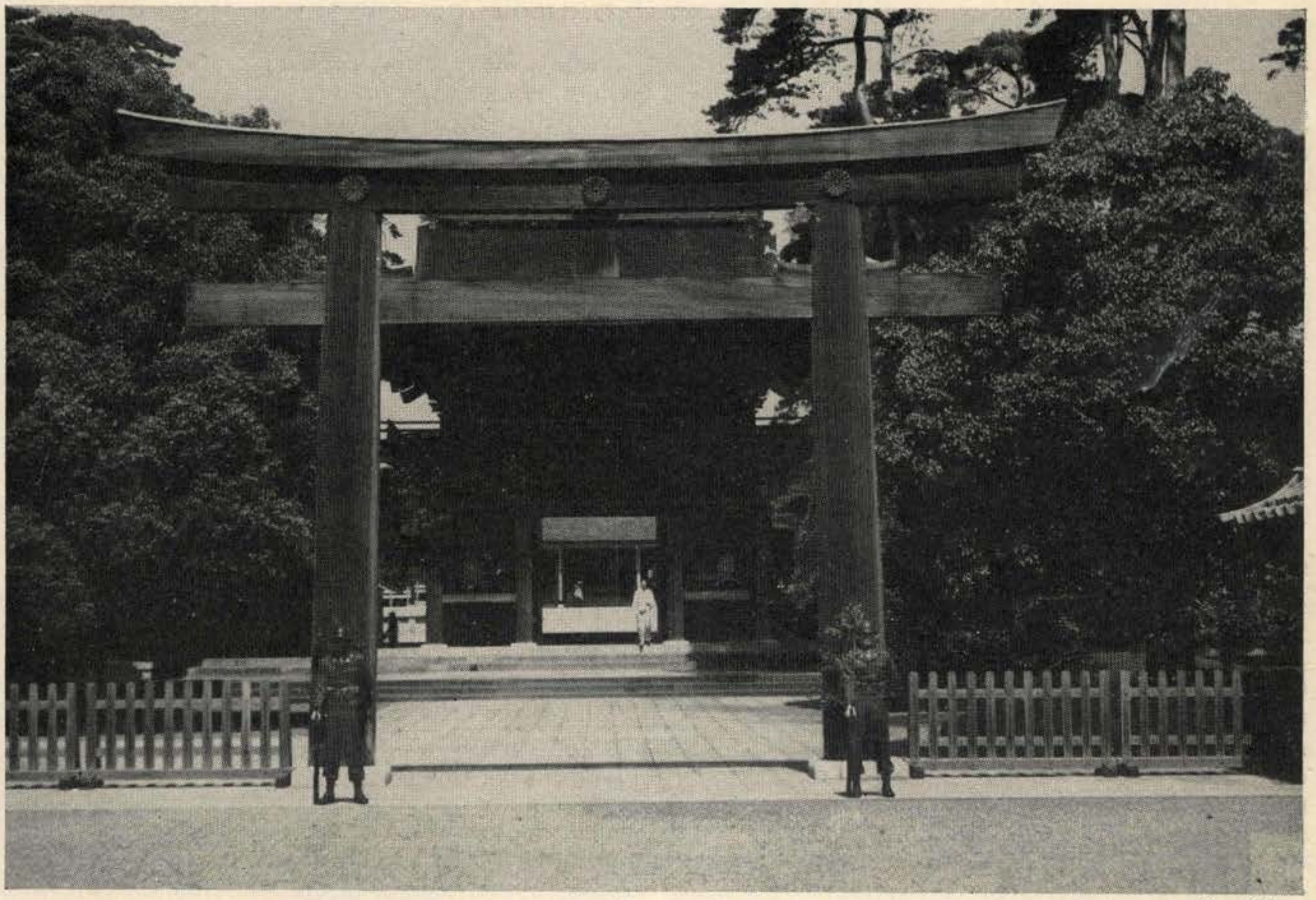
7. When the enemy is in a reverse slope defense position, the attacker can expect additional security on the forward slope because the enemy cannot deliver direct artillery fire upon him.

8. Artillery and supporting air power can be combined very effectively to isolate the battlefield and impede or prohibit the progress of enemy in bring up reinforcements to a critical area.

9. The use of a marshalling yard in an operation where a large number of non-organic vehicles are operating is the most efficient method for processing straggler vehicles.

10. The flexibility of an armored division combat command was clearly demonstrated during this operation when Combat Command B was able to absorb all combat units of the division plus two additional regiments of other divisions.

11. The responsibility for the destruction of a valuable installation which should be destroyed to prevent enemy capture must be assigned to a reliable agent and he should be physically present to insure its destruction. The Ludendorf Bridge was prepared for demolition. Had a responsible agent been present and carried out his assigned duties, the operation covered in this article would have never taken place.



Signal Corps

FAR EAST OCCUPATION

by CAPTAIN QUENTIN L. McNARY

IN Metropolitan Tokyo, the 2nd Cavalry Brigade, composed of the 7th and 8th Regiments, is performing occupation duties. The Brigade, part of the 1st Cavalry Division, was selected to occupy this important area by General MacArthur and Major General William C. Chase, the Division Commander. The Brigade is commanded by Brigadier General Hugh Hoffman, a veteran Cavalryman and a graduate of West Point.

The officers and men who landed in Japan with the Brigade were veterans of the Admiralties and Philippine Campaigns. At the inception of the occupation it was questionable how the Japanese people would react to the occupational forces of a foreign power and the eyes of the world were focused on the performance of the Brigade in this new type of work. Remember, these men had been in combat for over two years and had seen their comrades killed by the Japanese and seen the Japanese prison camps at Santo Tomas, in the Philippines.

To give a complete picture of the problems involved in the task of occupation and how the mission is being accomplished, let's go back to the morning of the 8th of September 1945: So that all the units of the 1st Cavalry Division would be represented on the climactic trek ending World War II, Major General William C. Chase and a large party left Hara-Machida, Japan at 0800 hours on 8th September 1945, bound for Tokyo.

This history-making convoy halted briefly at Tokyo city limits after passing through Hachioji, Fuchu and Chofu en route to the Japanese Capital. Following the halt, General Chase stepped across the line putting the American Army in Tokyo.

On the same morning, General MacArthur made his official entry into the city escorted by the 2nd Squadron, 7th Cavalry and a colorful display of the division standards and guidons. At the American Embassy, General MacArthur ordered Lieutenant General Robert L. Eichelberger, Commanding General of the Eighth Army, of which the 1st Cavalry Division was a component, to raise the American Flag atop the Embassy. As veteran Cavalrymen raised the flag, their comrades presented arms, while the Division band played the National Anthem. This flag was the same one that had flown over the Battleship *Missouri* while the surrender documents were signed.

Later the same day, the 2nd Brigade Headquarters Troop and the 7th Cavalry Regiment moved by train and motor convoy from Hara-Machida to Tokyo. The Yoyogi Parade Ground, adjacent to the Meiji Inner Shrine, was selected as the bivouac area. Needless to say, the Japanese Army didn't need this area for ceremonies because they were partially disbanded.

Two days later, on 10 September 1945, the 8th Cavalry Regiment arrived in Tokyo to assume its share of the occupation mission with its sister regiment, the 7th. Thus began the arduous task of looking after a nation which had never known the benefits of democracy.

The 2nd Brigade's first mission in the Japanese Capital was to assume control of the central portion of the city. Guards had to be placed around the American Embassy, where General MacArthur had taken up residence. Daily patrols began the task of locating, investigating and reporting all Japanese installations which had contributed to the nation's war efforts. All arsenals, factories, barracks and storage grounds had to be examined and reports made of their contents. In addition to these jobs, a check had to be made into the status of demobilization of the Japanese armed forces. Although the Imperial Army and Navy were being disbanded under the supervision of Japanese officials, our unit had to maintain liaison with them and keep a constant check on their progress. Many Japanese uniforms were still to be seen around town, but very little trouble was caused by these newly discharged soldiers.

Credit must be given to the Japanese people for their cooperation in giving information to the thousands of patrols that contacted them concerning the installations of the Japanese armed forces. Naturally, a minor group of officials appeared to be hostile in their attitude toward the patrols, but when this condition was reported to higher Japanese officials, the situation was rectified.

On 14 September 1945, General Hoffman was appointed Provost Marshal General of the Tokyo Area in addition to his other duties. The 720 MP Battalion was attached to the Brigade for use in surveillance and investigation. Provost Courts were set up to try offenses committed by the Japanese people against occupation personnel and the supervision of the Japanese government by occupation forces began.

Signal Corps

Replacements—Sturdy young successors to the combat veterans of the Admiralties, Leyte and Luzon.

With the ending of World War II and the landing of American forces in Japan, it soon became apparent that the occupation would not require any tremendous force of arms. Redeployment of veterans with long service commenced on a large scale. Some U.S. Army divisions, which had arrived in Japan only a few days before, began preparations for movement to the United States. Thousands of combat veterans left the Division at this time and troop strength hit a new low. The return to America of these troops meant that the First Cavalry Division, one of the units selected to remain overseas, would be charged with responsibility for maintaining an orderly occupation in a much larger zone of Japan.

On 16 September 1945, the 2nd Brigade was given the responsibility of occupying all of the city of Tokyo and Saitama Prefecture. Additional occupation areas were assigned the Brigade later. By March 1946, the zone included Tokyo, Chiba, Saitama and Ibaraki Prefectures embracing some 3,000 miles of Japan with a population of 15,000,000.

One of the most important projects during the early days of the occupation was to find suitable living quarters for the troops. Although September is not a cold month in Japan, the tent camp at Yoyogi was unsuitable for winter quarters for men who had spent the past two years in the tropics. A typhoon which damaged the camp on 16 September further emphasized the immediate need for more permanent quarters. Reconnaissance patrols had already been on the lookout for permanent quarters, so by 25 September all personnel had been moved into buildings of wood or masonry construction. Much cleaning and repair work was required to put these billets into the condition demanded by U.S. Army standards. The Brigade Headquarters was located in the buildings formerly occupied by the Imperial Guard Headquarters while the 8th Cavalry was billeted in the 3rd Imperial Guard Barracks across the street. The 7th Cavalry's new quarters were in the Japanese Naval Paymaster's School, and the Imperial Fisheries School near Tokyo water front.

Again in September 1946, redeployment hit the Brigade, and by January of 1947 the Brigade's strength had fallen to one-fourth of its required wartime total. The slow trickle of replacement was not sufficient to keep units up to strength. This placed a terrific burden on the whole organization. In addition, the replacements were mostly teen-agers who needed further training to bring them up to the desired level to maintain the established soldierly qualities of the Brigade.

On 30 September 1945, a Corps order gave the Brigade one of the major tasks in the early stages of the Japanese occupation, that of closing 21 banking institutions in Tokyo and seizing all records pending an investigation of foreign financial activities by these firms. This job was completed without incident when 21 teams consisting of guards, interpreters and counter-intelligence corps personnel descended simultaneously on the installations and effected the closing.

By far the most momentous occupation task was the actual destruction of Japanese war material. The initial problem was to obtain the thousands of guns and tanks which had been used by the Japanese Armed Forces.

When this was done they were rendered useless by bending or twisting them out of shape so they could not be restored. Ammunition and poison gas was disposed of mainly by dumping it from barges into the sea. The greatest part of the physical work was done by Japanese laborers under the supervision of American ordnance and chemical warfare personnel.

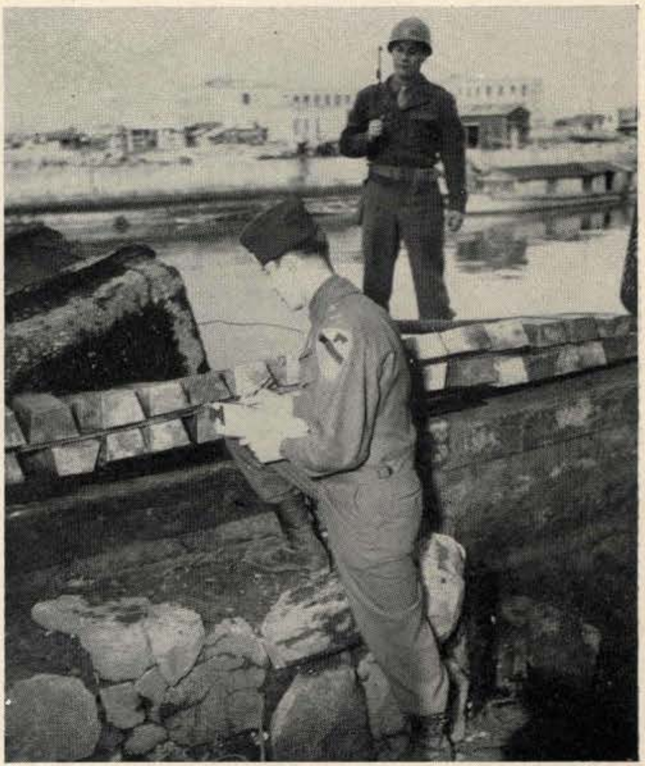
Upon the completion of the first year of occupation, the demilitarization of the Japanese war industries was in full swing. This period found our troops putting forth a major effort toward locating, inventorying and assisting in the destruction of arms, military supplies in addition to performing other routine duties. Factories which had been producing implements for the Japanese war machine were seized and either destroyed or held for reparations.

As the grim task of locating these war-making machines continued it seemed to become a game of hide-and-seek to demilitarize the zone. At the outset of the occupation, schools, temples and shrines were spared from search by our patrols, but after it became known that certain of these institutions were in use as storage places for ammunition, a systematic and revealing survey was made. Upon completion of the first year and one-half of occupation, unreported and undestroyed implements of war were still being turned up occasionally in small amounts.

Failure of the patrols to locate these contraband items earlier was not due to willful concealment of knowledge of these materials by the Japanese. While there naturally have been a few instances of deliberate concealment or passive tacturnity, in opposition to the surrender directives, on the part of some Japanese, much of the delay may be attributed to the fact that records were lost, incomplete or destroyed. Another factor in the delay was due to some of the occupation units being inactivated or redeployed before they could complete action on information which had been given them. A large number of the more recent finds resulted directly from information furnished by Japanese citizens or police.

During the second month of occupation, October 1945, the seizure of stocks of precious metals, jewelry, foreign currency and narcotics which were in the possession of Japanese business firms and industrial plants was begun. By January 31, 1947, more than 70,000 grams of platinum and a large quantity of diamonds had been confiscated by the Division and impounded in the vaults of the Bank of Japan. Approximately 60,000,000 grams of narcotics also had been seized and was either destroyed or turned over to the Japanese Home Ministry.

An interesting sidelight to the recovery of some of the precious metals was Operation Mudsill. Early in June 1946, the Brigade Commander was informed by Military Government that a large amount of silver ingots had been dumped into Tokyo Bay. General Hoffman immediately placed guards around this area and the operation got under way. Native divers first were called in and recovered some silver. They reported that they thought there were more precious metals at this location, but that the water was too deep for them to recover it. A coffer dam was recommended as the solution and one was immediately constructed and erected by the engineers. The hydroelectric pumps soon pumped all the water and as much of the silt as possible from this area. When this was completed it became apparent that there was silver in large quantities in this location. Approximately 840 ingots of silver valued at $870,000 were recovered from this spot alone. Other occupational duties were as follows:



Signal Corps

Recording silver ingots recovered from Tokyo Bay through Operation Mudsill.

The dusting of all Japanese nationals with DDT. This was performed to prevent epidemics of any diseases. During this period many of the Japanese people were attempting to prevent epidemics of any diseases. During this period many of the Japanese people were attempting to locate their families so there was a great deal of movement which made the task enormous. All roads leading into Tokyo were blocked and thousands of pounds of DDT was used.

At the same time inventories were made of all lumber mills in the zone of occupation to determine production capacity and the stocks of lumber on hand. The accomplishment of this mission was, by no stretch of the imagination, a menial task.

The allies brought the freedom of speech and assembly to the people of Japan. In furtherance of these ideas numerous mass meetings and rallies were permitted and encouraged by the occupation authorities. To insure that the meetings were not molested by the police or other unsympathetic elements, military observers were provided who stood by and were equipped to summon help by radio if a peaceful assembly degenerated into a riotous mob.

Another interesting sidelight on the duties of the 2d Brigade was the Anti-Yoshida demonstration at the Imperial Palace Plaza which took place during the period 17 December to 20 December 1946. The excitement was recognized when the Brigade was alerted to observe and provide the necessary surveillance of the demonstration.

Signal Corps

Vast throng of Japanese in holiday mood, shown on Imperial Plaza in Tokyo May 10, 1948. Brigade alerted for trouble—none came.

Although 200,000 people were in attendance at this demonstration there were no incidents and the group remained orderly throughout. CPs were on 24-hour schedule and the smell of burning gas from the armored cars was prevalent in the air.

On 1 February 1947, another alert was ordered. This time because of an expected strike by Japanese laborers. Patrols were dispatched and CPs again placed on a 24-hour basis. The alert plan which each unit had kept in readiness against such an emergency now stood them in good stead. That the strike failed to materialize was due to General MacArthur's timely message. The message was a source of gratification to all, but whatever the eventuality at that critical hour, the Brigade stood ready.

The 2d Cavalry Brigade was spotlighted to the world-at-large because of its responsibilities in conducting an orderly and efficient occupation in the Japanese capital. This was particularly significant to the people in Japan who were kept informed of the conduct of the occupation forces in Tokyo proper.

The Brigade naturally had to be always on its mettle when exposed to the view of the Japanese people.

Lest any unreconstructed malcontent mistake the charity and benevolence of the occupation for a sign of weakness, the 2d Brigade regularly participated in parades, reviews and ceremonies on the Imperial Plaza in the heart of the downtown section of Tokyo. On an average of once every few weeks, troops and armor of the Brigade, with other members of the division, assembled on the Plaza in front of the Emperor's Palace and put on a display of armed might which left no doubt in the minds of all who saw it that the occupation forces were ready and able to enforce the will of General MacArthur should the necessity arise.

Appropriate parades were held on such occasions as Army Day, and Manila Day. The latter was in commemoration of the "Flying Column's" liberating dash into the capital of the Philippine Islands on 3 February 1945.

In August of 1946, a policy was established by 8th Army for the attachment of Honor Companies to the 2d Brigade. These units were picked troops from the other occupying divisions, the 11th Airborne, the 24th and 25th Divisions, and several of the units from the British Commonwealth Occupying Forces. Their mission was to help maintain the guard on the Imperial Palace, but it also gave the men a chance to see Tokyo, the cultural and spiritual center of Japan. Some of the units of the BCOF were the 2d New Zealand Cavalry, the 65th Australian Infantry Battalion and the 34th Australian Brigade. It was an honor to have such units attached to the Brigade and many reviews were held on the Imperial Plaza with the 2d Cavalry Brigade Commander, General Hoffman, personally taking the review.

Still another duty which the 2d Brigade performed was having surveillance teams observe the elections which were conducted in the Brigade's zone of responsibility. The mission of these teams was to see that fairness and honesty prevailed, not only during the voting, but also in the counting of votes afterward. It was interesting to see the Japanese women exercise their franchise to vote and they turned out in thousands for this privilege.

The work of occupation still goes on and the Brigade is still playing an important role in this work. Duties of the Brigade are highly varied, combining occupation, basic training, small-unit training, supply and maintenance of the many outposts and supporting the activities of the Military Government Teams.

Policies of the occupation are rigidly enforced and law and order must be maintained. Guarding of warehouses, supply depots, and supply trains must be carefully watched and transportation of war criminals to and from prisons is another full-time task.

In Japan, the men of the 2d Brigade are always on the alert to prevent crimes against the occupation forces and to apprehend offenders. Black market violations are not so common now, but occasionally burglaries in occupation homes mean hardships to occupation forces.

Fire guards are maintained every night in all posts, camps and stations because just a spark is dangerous in the highly inflammable Japanese constructions.

Several natural disasters have occurred during the time the Brigade has been on occupation duties. During September of 1947 there was a widespread flood and the troopers rescued thousands from the peril of drowning and evacuated many other thousands. As a result of this flood, a grave danger exists all along the Tone-gawa, a

Signal Corps

Commanding General Congratulates Honor Students of the 1st Cavalry Division's Central School.

large river to the north of Tokyo. Dikes were seriously damaged and repair work is slow. However, great progress has been made and it is expected the area will be safe in two more years provided no more floods occur in the meantime.

The warning net set up by Division included such items as artillery observation planes, radios and telephones. The Division Engineers brought in assault boats to evacuate stranded Japanese from roof tops and broken dikes. It is estimated that almost half a million Japanese owe their lives to fast moving American troopers during this period.

One of the things that the Army has done to relieve the boredom of occupation duties is to offer the soldier an opportunity to educate himself during his stay in Japan. Early in the occupation General Hoffman encouraged the soldiers in his command to take advantage of the Army Education Program. All the troopers of the 2d Brigade have the privilege of attending the Army Education Center School here in Tokyo, where they can work for equivalent credit in civilian schools in the States. Such diversified courses are offered as: Typing, mechanical training, language courses, history courses, mathematics and a variety of other subjects. Thus the troopers can become something more than a weapon carrier and can learn a trade that will benefit them when they return to the States. Most of the troopers want to make a career of it, however, and enlistments are increasing by leaps and bounds. The expression "Never had it so good" really applies in this unit—2nd Brigade Best in the Army.

While the Japanese make their departure from a feudal system, to a democratic way of living, they are beginning to have a better understanding of America and Americans. In this, the troops themselves have done a great deal to mold the friendships and co-operation necessary in working out the destinies of mankind in the Orient.

As we go into another year of occupation duties we are proud that the traditions of this famous Brigade are still being carried on to greater glory. The hard, bitter, combat men have been replaced by an eager group of younger soldiers; still the pride in their unit is easily seen in these youngsters. The parades and saddle blanket patch may lead the casual observer to think that the Cavalry units are a "shoe shine and hair cut" outfit, but the neat appearance of the average trooper springs from a firm foundation which was established long ago. The Brigade is composed of troopers with a background which includes thorough training and firm, but fair discipline. It is also based on each trooper's confidence in his ability to perform any military duty assigned to him individually or as a group.

The task of occupying Japan has not been easy, but the caliber of the men and officers from the 1st Cavalry Division have been a credit to the Army and to the people of the United States. It can be said that these officers and men are doing their part in showing the people of Japan that democracy will work, even in the "Land of the Rising Sun" which has not practiced democracy for thousands of years. We hope Japan will become a true Democracy and this meager start has not been in vain.

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The Armored Cavalry Journal

Make Use Of The Service We Provide For You

Answers to ARE YOU WELL INFORMED questions on page 31

1. Dean Acheson, United States; Ernest Bevin, Great Britain; Robert Schuman, France and Andrie Vyshinsky, Russia.
2. The U. S. Supreme Court. Burton, Reed, Murphy and Rutledge.
3. Mrs. Perle Mesta of Washington, D. C.
4. Twelve.
5. It outlaws hundreds of thousands of Catholics in Italy, Czechoslovakia, Poland and France who profess to be both Catholics and communists.
6. Belgium. He is attempting to regain his throne.
7. Sir Stafford Cripps.
8. He is U N Administrator of this Kashmir plebiscite.
9. Israel, Egypt, Jordan, Syria and Lebanon.
10. Eva Peron.
11. Mao Tse-tung.
12. President Elpidio Quirino of the Philippines. President Syngman Rhee of South Korea.

NOMENCLATURE
It Can Help or Hinder Armored Training

by LIEUTENANT COLONEL C. F. FIORE

PREFACE

Though Signal Corps names
  are terrors indeed
Their use is explained
  by professional need.
Unlike the psychologist
  with his many psychoses;
The botanist's names,
  and the medic's thrombosis,
The Army abhors
  nomenclature at best
And "SCR" is a riddle,
  a puzzle, and test.
Why we accept
  SSNs with such glee,
The tank designations,
  and other names that you see,
Yet recoil in fright
  at "AN GRC"
Will always remain
A deep mystery to me!

L. D. P.

THE medical profession long ago discovered that when a pill is hard to take, a wise way to get it down a patient's throat is to sugar-coat it and color it pink.

This astute strategy may seem miles from the subject of Armored training—but there is an analogy. The purpose of this article is to show that a little sugar-coating and color applied to the highly technical subject of Armored Force equipment might well result in a more palatable educational program and therefore a more receptive attitude on the part of the student.

Specifically, the sugar-coating that this article recommends is in nomenclature. This is not the complete answer to more effective Armored Force teaching, of course. The final solution must evolve from a simplification of the equipment itself.

Even as things are today, a more simple and easy-to-take nomenclature can do a lot to help familiarize students with the very intricate and complex equipment of the Armored Force. This familiarity will, in turn, develop a greater affinity for the equipment, and a greater desire to know its every detail of operation.

If conversations with many students of the Armored School at Fort Knox are any criteria, there is little doubt that our present system of nomenclature does the exact opposite. Many students are so baffled and confused by the welter of colorless, technical designations for equipment, that unintentionally and unknowingly, they develop what is termed a psychological block to learning.

Because students find it difficult to master this nomenclature, they develop an antagonism toward the equipment, and sometimes even toward the branch of service that produced it.

The whole premise of this thesis, therefore, is that failure to understand equipment can well be a direct outgrowth of an inability to identify it from its nomenclature. Conversely, quick-to-register and easy-to-identify nomenclature well might help stimulate the study and knowledge of equipment.

A name, in other words, can help or hinder. The ¼-ton 4 x 4, for example, might never have achieved the GI affection and public enthusiasm it enjoys—if it hadn't been named the JEEP. The W.A.A.C. might not have fired public imagination and respect to the degree it did —if it hadn't been dubbed the WAC.

We could learn from advertisers, too, how much a name can do to stir fancy, arouse curiosity, and compel acceptance of a product. Why not then sweeten and add color to the otherwise pale and distasteful pill of Armored Force nomenclature? Why not titillate the students' minds with provocative, easy-to-remember names, instead of repelling, hard-to-remember ones?

Someone might say, at this point, that those who manufacture, procure, or distribute equipment may resist such an idea. This group may well prefer the present identification system because it lends itself readily to cataloguing, stocking, and requisitioning. But is it really an insurmountable problem to list technical names on a catalogue page and alongside each put in *italics* the sugar-coated version? Like this:

¼-TON 4x4 (JEEP)

Others may say at this point, "specifically, how would you sugar-coat the nomenclature of Armored Force equipment?" The solution to this problem may not be as simple as it may seem at first glance. Confining ourselves strictly to communications equipment for the purpose of this article, let us first glance at the nomenclature systems now in use.

Lieutenant Colonel Caesar F. Fiore was born in Newark, N. J., in 1911; raised in Montclair, N. J. He is a graduate of the United States Military Academy, Class of 1935 (in Cavalry). He served with the 7th Regiment and 91 Rcn Squadron of the 1st Cavalry Division, 2nd Cavalry Division, where he organized the Rcn troop for the Division which later became the nucleus for the Rcn Bn for the 9th Armored Division, and with the 9th Armored Division as commanding officer of the 89th Rcn Bn from time of Division's Activation throughout the war until the 9th Armored was deactivated.

In 1939 he attended the Advance Course and the Motor Course at The Cavalry School, Fort Riley, Kansas; in 1946 he attended the C & G S 27th Class and the Advance Course at the Signal School, Fort Monmouth, in 1947.

At present he is assigned to the Communications Department at The Armored School, as head of one of the teaching divisions.

ARMY NAVY
NOMENCLATURE CHART
SIGNAL EQUIPMENT

1	2	3	4	5	6
First Letter, Installation	*Second Letter, Type of Equipment*	*Third Letter, Purpose*	*Model No.*	*Modification Letter*	*Miscellaneous Identification*
A Airborne (installed and operated in aircraft)	**A** Invisible light, heat radiation	**A** Group auxiliary assemblies (not complete operating sets)	**1**	**A**	**XYZ** Change in input voltage, phase, or frequency
B Underwater mobile, submarine	**B** Pigeon	**B** Bombing	**2**	**B**	**XA** Aircraft Radio Laboratory
C Air transportable (designed to be air transportable as stated in specification or military characteristics)	**C** Carrier (Wire)	**C** Communications (receiving and transmitting)	**3**	**C**	**XC** Camp Coles Signal Laboratory
D Pilotless carrier	**D** Radiac	**D** Direction finder	**4**	**D**	**XE** Camp Evans Signal Laboratory
F Ground, fixed	**F** Photographic	**G** Gun directing	**etc.**	**etc.**	**XM** Fort Monmouth Signal Laboratory
G Ground, general ground use (includes two or more ground installations)	**G** Telegraph or Teletype (wire)	**L** Searchlight control			**XN** Navy
K Amphibious	**L** Counter-measures	**M** Maintenance and test assemblies (including tools)			**XO** Eatontown Signal Laboratory
M Ground, Mobile (installed as operating unit in a vehicle which has no function other than transporting the equipment)	**I** Interphone and public address	**N** Navigational aids (including altimeters, beacons, compass and instrument landing)			**XT** Toms River Signal Laboratory
P Ground, pack or portable (horse or man)	**M** Meteorological	**Q** Special, or combination of types			**T** Training Set
S Water surface craft	**N** Sound in air	**R** Receiving or listening			★ Used by Army or Navy and an Allied Government (precedes AN)
T Ground, transportable	**P** Radar	**S** Search and/or detecting			
U General utility (includes two or more general installation classes, airborne, shipboard, and ground)	**R** Radio	**T** Transmitting			
V Ground, vehicular (installed in vehicle designed for functions other than carrying radio equipment, etc., such as tanks)	**S** Special types, magnetic, etc. or combinations of types	**W** Remote control			
W Underground, fixed	**T** Telephone (wire)	**X** Identification and Recognition			
	V Visual and Light				
	X Facsimile or Television				

Experimental Development

In the Signal Corps nomenclature system, letter prefixes are used with numbers to indicate the model of a particular item.

Title	*Item*
SCR-508	Signal Corps Radio, Series 508
SCR-506	Signal Corps Radio, Series 506
EE-8	Field telephone
EE-8(A)	Field telephone with modification
HS-	Headset
TS-	Handset
DR-	Drum
BD-	Switchboard

The first thing we note about this system is that the letter and number title describes the equipment little or not at all. In some cases even the letters fail to give a clue as to the proper title, while in others the letters are condensations of the complete title. A need is apparent then, for a system that more adequately defines the equipment. Such a system is to be found in the Army-Navy nomenclature system.

This system was developed early in the last war when it became apparent that standardization was necessary if any measure of communication cooperation was to be effected in joint operations. In this system the title of each piece of equipment is prefixed by AN/standing for Army-Navy. The succeeding letters and numbers describe the equipment, as prescribed in the chart shown above.

This system then, gives a ready hint as to the type of equipment and where it may be found—that is, if you happen to remember the meaning of the three letters. For example: The AN/GRC is a Radio Set capable of sending and receiving, and it is further known that it is meant for ground general use. It can be used either in a vehicle or on the ground. The AN/PRC means the equipment is pack or portable. But the pill is still bitter and still fails to meet the student needs.

Quite frequently here at The Armored School we in the Communication Department are accused of being entirely too technical. From numerous inquiries I have found that the basis for this charge lies in our nomenclature system. The student rebels inwardly at the term expressed in numbers and figures. For example:

Student Rejects	*Description*	*Student Accepts*
BD-71	A switchboard with six drops or cords usually used at battalion level.	Battalion switchboard.
BD-72	Same but with twelve cords and used at Regiment.	Regimental switchboard.
DR-4	Drum of field wire containing ½ mile of wire.	½ mile drum.
DR-5	Drum of field wire containing 1 mile of wire.	1 mile drum.
SCR-536	Small radio used by Infantry, carried in the hand.	Handy-Talkie.
SCR-300	Small radio used by Infantry, carried on back.	Walkie-Talkie.

With these few examples it becomes apparent that the student wants a name that is void of letters and figures and yet describes the equipment somewhat.

A survey here at The Armored School of all instructor personnel elicited some rather interesting views of the situation. All instructors were presented with a questionnaire listing possible titles for our more popular sets with the idea of getting their reactions. The titles and reactions are listed below. The few who thought we should stick to symbol type nomenclature were those who had had more experience with the equipment and therefore were better acquainted with the nomenclature. It follows that they see no reason for any simplification.

SCR-536	
*Handy-Talkie.	58
Ultra portable.	2
SCR-300	
*Walkie-Talkie.	53
Portable.	3
AN/VRC-3	
*Tank Infantry set.	33
Infantry liaison set.	1
Vehicular Walkie-Talkie	12
Mutual aid set.	0
Infantry tank set.	9
3-set.	3
SCR-508-28	
Tankers' set.	4
*Tankers' talkie.	13
Tank set.	4
Vehicular.	0
Tank command set.	12
Tankers' radio.	5
10-channel tank set.	5
Voice command set.	3
Pushbutton tank set.	10
Big command set.	1
SCR-399	
Mobile set.	8
*High power set.	13
Division command set.	17
Long range set.	4
Mobile radio station.	18
SCR-509-10	
Liaison set.	20
Little command set.	2
Tank liaison set.	2
Semi-portable.	11
Ground vehicle box set.	1
Liaison voice set.	2
Hq. control set.	0
Two man portable set.	1
*Two channel voice set.	20
SCR-506	
Radiotelephone telegraph set.	6
Vehicular voice key set.	2
Radiotelegraph armor.	2
Voice code command set.	7
Command post code set.	3
Medium range command set.	13
Vehicular code voice set.	3
*SCR-506	15
CW set.	8
AN/GRC-9	
*All purpose set.	17
Vehicular ground voice key set.	5
Radio telegraph infantry.	3
Ground vehicular infantry set.	1
Infantry command set.	10
Hand generator set.	11
Infantry code voice set.	5
Infantry medium range command set.	4
Infantry CW set.	2

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*Adopted for general use in instruction at The Armored School.

There are several disadvantages to this type of nomenclature system. First, models change from time to time and would with each change require a new name. If, for example, we dub the SCR-508-28 as the Tanker Talkie, what shall we do when the new set designed to replace the SCR-508-28 is issued? Shall we call it the Tanker Talkie-1 or Model A or just forget the Tanker Talkie and adopt a new name such as 80 channel set? It seems that the commander isn't too much interested in technical design or mechanics, but more in general terminology. Perhaps then, that Tanker Talkie would describe the set used in tanks regardless of whether it is an SCR-508 or an AN/GRC set. Second, this same set is used in many places other than in tanks. Artillery and infantry use it, as do reconnaissance units. It is found in all headquarters as a command set. Perhaps Tanker Talkie is too specific then, for it is not universally a tank set and we should go after a more general name. Third, a title decided upon here at Fort Knox might have little or no weight at Fort Sill or at Fort Benning. Each would lend its own ideas to the problem of nomenclature, and the result would be a non-standard nomenclature list. Obviously, this would be a grave error. Some may recall the general confusion that developed during the war over the title "Jeep." At first it was thought to be the ½-ton C & R car; but when the ¼-ton vehicle was introduced it became known as the Jeep. And even today there are those who insist that the Jeep was the ½-ton C & R not the ¼-ton which was sometimes known as Peep. We must learn to speak the same language.

The solution to this, of course, would be to have the titles developed at higher level. A suggestion on this would be, to have the set as it is developed and produced by the Signal Corps, titled with both a technical designation for use in supply manuals, etc., and a popular name for use in the field and in the school.

During and since the last war no effort was spared to make learning more palatable for the military student. Today we are even toying with comic book type field manuals—truly a revolution in educational methods. The problem of nomenclature offers a bloody battle of its own, but it should be licked. We who have the teaching problem look for an early solution.

FUTURE SIGNAL COMMUNICATIONS ARTICLES

We are working, with Lieutenant Colonel C. F. Fiore, on a plan whereby he will attempt to furnish one article, featuring some phase of Armored Signal Communications, for each of the next several issues of the Journal. The first of this series, "The Side Hill Badger," will appear in the September-October issue.

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Vol. I: Adjustment During Army Life

Vol. II: Combat and Its Aftermath

By S. A. Stouffer and Colleagues.[1] Princeton University Press, 1947. $7.50 per volume; $13.50 per set.

A Review By

Dr. Raymond V. Bowers

DR. BOWERS is Executive Director of the Committee on Human Resources, Research and Development Board. As such he has been in the center of the Military Establishments' research activity in the field with which these volumes are concerned.

Dr. Bowers took his graduate work in Sociology and Anthropology at the University of Minnesota, studied, subsequently, at the Yale Institute of Human Relations, and was chairman of the Department of Sociology at the University of Rochester before the war. He came to Washington in 1942 as assistant chief of the Research and Statistics Division of Selective Service, spent two years in the Navy, was in Japan on two research missions after the war, and returned to Selective Service as chief of the Research and Statistics Division before joining the staff of the Research and Development Board.

These volumes deal with men at war and particularly with the application of science to the perplexities underlying the utilization of men at war. They are the story of the most systematic investigation of the attitudes of the members of a large social institution ever conducted. The institution was the Army from Pearl Harbor to VJ Day. The work was done by a staff of civilian and military social psychologists and sociologists that sounds today like a Who's Who in those fields, and which was known as the Research Branch of the Information and Education Division. The purpose was "to provide the Army command quickly and accurately with facts about the attitudes of soldiers which, along with other facts and inferences, might be helpful in policy formation."

The guiding administrative genius of the program was Major General Frederick Osborn, Director of the I&E Division; the professional director was Dr. Samuel Stouffer, now Professor of Sociology and Director of the Social Relations Laboratory at Harvard University. The Army leaders who sponsored the work include such names as Marshall, Somervell, and Eisenhower.

Some 300 studies were conducted by the Research Branch during the four years of the war, in the course of which some half a million soldiers recorded their attitudes. Many of these studies were on Army-wide problems such as the morale of the infantryman, the veneral disease problem, psychoneurotic screening before combat, "goldbricking," leadership ability of officers, combat incentives, rotation policies, preferences in radio programs and magazine articles, postwar plans of soldiers, etc.

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[1] The authors of Volume I are as follows: S. A. Stouffer, Edward A. Suchman, Leland C. DeVinney, Shirley A. Star, and Robin M. Williams, Jr. The authors of Volume II are as follows: S. A. Stouffer, Arthur A. Lumsdaine, Marion Lumsdaine, Robin M. Williams, Jr., M. Brewster Smith, Irving L. Janis, Shirley A. Star, and Leonard S. Cottrell, Jr.

U. S. Army

Others were on problems of interest mainly to local commanders, as for example, why men in the S. Pacific did not use atabrine as regularly as the Army thought they should, what were their fears with respect to Japanese ruses in the combat zone, what attitudes and practices were associated with trench foot, what were the men's attitudes toward Chinese in India-Burma, or toward fraternization with the Germans, how were Negroes treated in Southern camps, etc. Research teams functioned in the Zone of the Interior and in most of the overseas theaters.

These volumes are the result of over three years work by members of the wartime staff under the supervision of the Social Science Research Council. The object was to reanalyze the wartime studies and present their substantive results for the use of the Armed Forces, and their scientific lessons for the advancement of the sciences of human behavior. This is a public service of a high order and provides a model not only of professional ethics but also of public accountability. It is hoped that the Military Establishment will grasp the opportunity to build on this foundation.

Both volumes are essentially descriptive of soldiers' attitudes, particularly of those attitudes seeming to reflect adjustment. The first volume studies general problems of personal adjustment of soldiers to the institutional life of the Army; the second treats the special problems of combat and its aftermath. It might be said here that personal adjustment, throughout the volumes, is stated in terms of adaptation as viewed by the Army Command, *i.e.,* it is adjustment to the official Army situation.

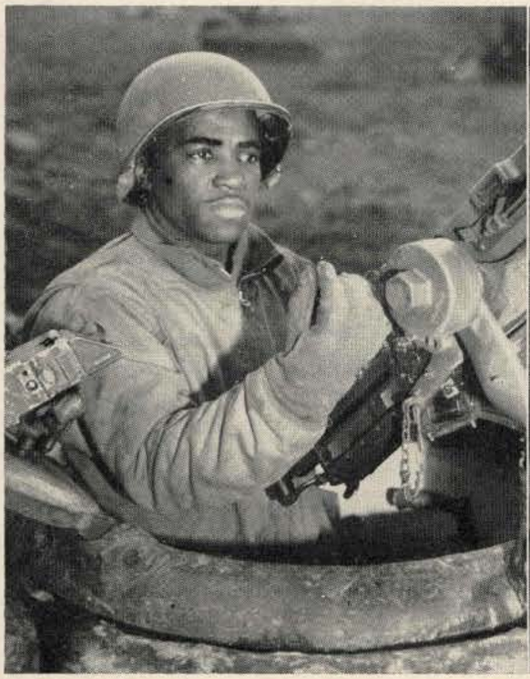
Volume I begins with a trenchant analysis of the problem of building the new Army on the basis of the old as seen through the eyes of one infantry division at the time of Pearl Harbor. As summarized by the authors: "Due to past neglect by the American people, the Army lacked tools and it lacked leaders who were trained to use them and who were willing to break the webs of tradition. And in its new type of citizen-soldiers it had enlisted men of higher average education, more impatient of tradition and critical of contrasts between Army ways and civilian ways. But not all enlisted men were critical and most of them were motivated to do their duty." Succeeding chapters provide a special view of the growth of the new Army, as seen in detailed analyses of personal adjustment and maladjustment. Three types of data were used: (a) *verbal behavior of soldiers* as represented mainly by written answers to questions carefully designed to reveal the soldiers' attitudes toward their adjustment; (b) *nonverbal behavior of soldiers* as represented by such objective criteria of adjustment as promotions, infractions of regulations, and psychoneurotic episodes; (c) *background characteristics of soldiers,* such as age, education, marital status, length and type of service, etc. The analysis consists of determining the types of attitudes most closely related to the objective indices of adjustment, and then using these types of atti-

ADJUSTMENT —

tudes (called a profile of attitudes) to determine variations in the adjustment of men with different background characteristics. The types of adjustment attitudes (the profile of attitudes) are as follows: attitudes indicating *personal esprit* or sense of well-being; attitudes indicating *personal commitment* or sense of obligation and willingness to make sacrifices; attitudes indicating *satisfaction with one's status and job;* and attitudes indicating *approval of the Army*.

The general analysis of the data is given in considerable detail for the professional reader. Matched comparisons were used to provide maximum control for interpretations. This analysis involved comparison of over 8,500 pairs of percentages, each percentage in turn being based on the responses of anywhere from forty to several hundred soldiers. The following profile comparisons are typical of the results of this part of the analysis: noncoms as compared with privates, were found, on the average, to have higher personal esprit, to be more personally committed to the war, to find greater satisfaction in their job, and to be less critical of the Army; high school graduates, as compared with those with less education, had more personal esprit and were more personally committed to the war, but found less satisfaction in their jobs and tended to be more critical of the Army.

COMBAT . . . . AND . . . .



Negro soldier

A la population
de
BASTOGNE

Exhaustion

The remainder of the first volume is devoted to the analysis of the data with reference to selected problems. These are: the Army status system and problems of social mobility; job assignment and satisfaction; attitudes toward leadership and social control; the orientation of soldiers toward the war; and the Negro soldier. Each of these chapters contains a wealth of cautiously analyzed data for the personnel policy maker.

Volume II, entitled "Combat and its Aftermath" is undoubtedly the most unique social record in the history of war. The "opinions of combat troops, both ground and air, have been ascertained and analyzed quantitatively. Thus it is possible to compare, with confidence in the representativeness of the responses, the feelings of men of varying degrees of experience or responsibility as they faced their combat jobs." The authors were fully cognizant of the oft held opinion that "griping is a healthy sign." Hence they were careful to compare the attitudes toward combat with subsequent behavior in combat.

The chapter headings reveal the importance of the problems for which data are available: combat motivations among ground troops; problems related to the control of fear in combat; the combat replacement; attitudes of ground combat troops toward war echelons and the home front; objective factors related to morale attitudes in the aerial combat situation; psychoneurotic symptoms in the Army; problems of rotation and reconversion, etc.

The experienced combat leader will find expressed here, in statistical form, many of the hunches he has developed since his front-line experiences. He will also find new insights into the perplexing behavior of his men, or, as the authors stated, into "the complex combination of private and institutional adjustments which enabled most men to cope with the fundamentally unsatisfactory situation," and into "the final insufficiency of all the various compulsions, incentives and supports in the face of extreme stress beyond individual powers of prediction and control."

Volume II ends with chapters on the "point system" and "the soldier becomes a veteran," summarizing studies which represented the faith of the high command at the end of the war in this type of social research. For as victory seemed inevitable, the two great problems were how to demobilize and what the millions of demobilized men would do. The "point system," developed by the Research Branch, was accepted as the best answer to the former, and the Research Branch's study of soldiers' postwar plans was widely used as the best index to the latter.

The wealth of data and insights contained in these volumes cannot be adequately described in a book review. They represent a resource which it is hoped the military departments will utilize and on which they will build.

One of the new frontiers in the application of science to military operations is the study of human resources. All the great memoirs of the war have stressed the critical value of the human factor, and, particularly, morale or the willingness of men to subordinate personal considerations to the common objective. In the heat of battle men are not reliable students of their reactions, and, long after battle, the failures and tricks of memory are inadequate mirrors of the past. The Research Branch pioneered a way of overcoming these deficiencies and left a record which is outstanding and unique in the annals of war.

ITS . . . . AFTERMATH

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White soldier

The scientific progress of World War II has been generally continued during the postwar years. There is general conviction that national security depends upon it. As Dr. Compton, Chairman of the Research and Development Board, has recently said, security depends on keeping ahead of the field. The one field, however, which we have allowed to decline since the war is the application of science to the problems of the management of military personnel. The appearance of these volumes recalls this to our attention and provides a great opportunity to correct this imbalance. It is in the national interest that these prospects become solidly established and financed through a coordinated program of human resources research in the Military Establishment.

These are the first two of a four-volume series entitled *Studies in Social Psychology in World War II*. The reader will be equally rewarded by the last two volumes: *Experiments on Mass Communication* and *Measurement and Prediction*.

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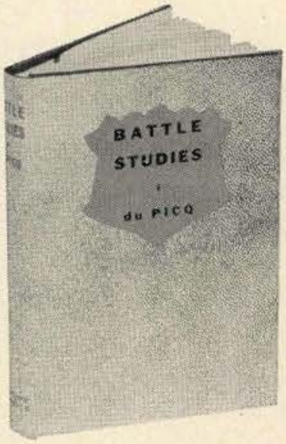
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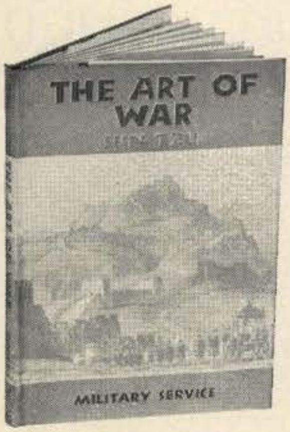
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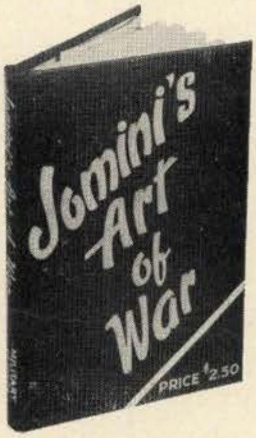
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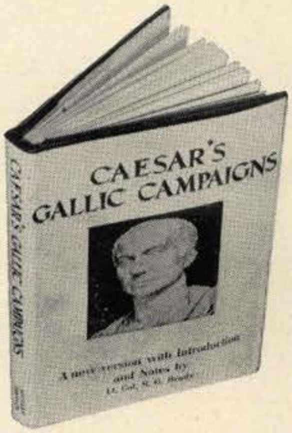
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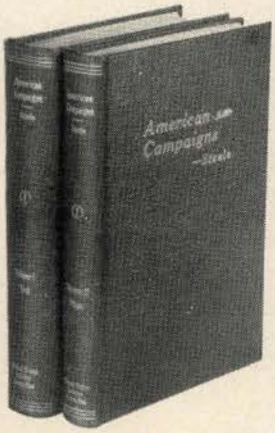

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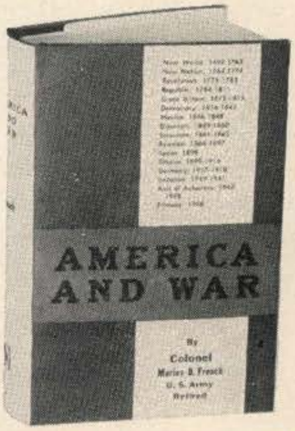

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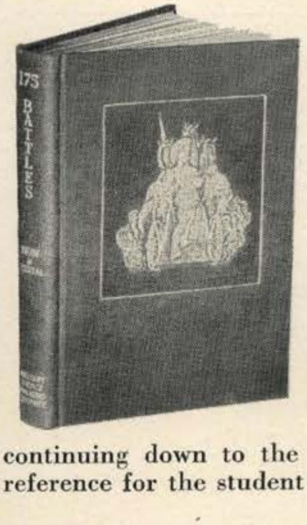

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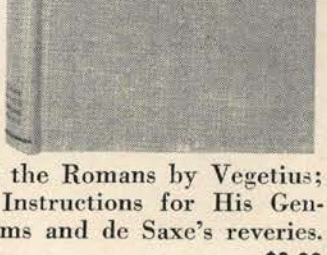

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ARMORED CAVALRY JOURNAL

THE FIELD FORCES TEAM

The New York Times

FROM THE ARSENAL OF DEMOCRACY

Tanks in a storage depot at Chambersburg, Pa. Discussion of MAP to support the North Atlantic Pact puts the eye on American Armor. (See Page 2)

HANSON BALDWIN

SEPTEMBER-OCTOBER, 1949

VOL. LVIII NO.5

RECONNOITERING

The Future is Ours!

IT is just one year since we embarked upon this personal column idea to bring you closer to us—and us closer to you. In that period we've covered much of the background of operations on the home end of The Journal—circulation, articles, books, and a variety of interesting things on the editorial end.

In these various columns you have seen reflected an ever brighter picture. Perhaps you are wondering about the details of this upsurge, and how we intend to exploit the breakthrough in true Armored Cavalry fashion.

ARMORED CAVALRY JOURNAL

IF you have followed along during a critical period, you recall our vault to the shoulders of Georgie Patton: the policy change that put us on the highroad. From such a commanding position what could we see? Many things; and as they are undoubtedly familiar to all, there is no need to review. The important thing is this; what did we do about it?

With limited objective attacks, we led up to the jumpoff—the July-August issue of 1948, an all-armor number corralling the story of the moment. The Book Section got a thorough working over, with a complete weeding and revision. News notes and letters began to creep in. This column got underway. The cover began to tell a story, teasing you to the inside. We regrouped our extended lines from 80 to 64 pages. We upped the subscription rate 50¢. We compensated for the lost pages and higher rate by careful selection of balanced, solid material.

The first issue of the year blossomed forth in a new cover design. New composition, make-up and type were introduced, and the increase in pictures expanded our engraving bill some 200%.

Some of you who are now subscribers began to feel the bid of our promotion. The magazine has become its own best promoter. As the product improved, many important people got behind it. The subscriptions began to roll in. And so, briefly, we reach this moment.

WHAT do we plan to do with our much increased potential? Some of it is "doing." Much more we have on tap. For instance, we could use more pictures. . . . We'd like to throw in more art work. . . . We'd like to add color to each issue; we've started in this issue, the first time in years. . . . We'd like to expand our promotional program. . . . We *have* to expand the staff. . . . Above all, we want to set up a schedule of payments for authors. The Journal has not paid its authors for years. We have had to execute our renaissance on contributed material.

ANALYZE this issue and see what you're getting. You have a general feature on American Armor. You have a feature on a part of the armored team. There is an analysis of enemy armor. There are articles on armored training and armored doctrine. There is a combat historical narrative on armored infantry, and another historical combat piece marking the tenth anniversary of the war and the moment of evolution so significant to our branch. There is a feature book review of one of the important campaigns of the war. Two name authors appear in the issue. There is a general military article on service at the international level.

This is not reviewed for you as a means of backslapping. We want you to be conscious of what we (you, the staff, our branch) have got. We're in great shape. As each issue goes out we're in better shape. Not only is ours the Arm of the Future! This is the Journal of the Future! Take it from us, *the future is ours!*

The Editors

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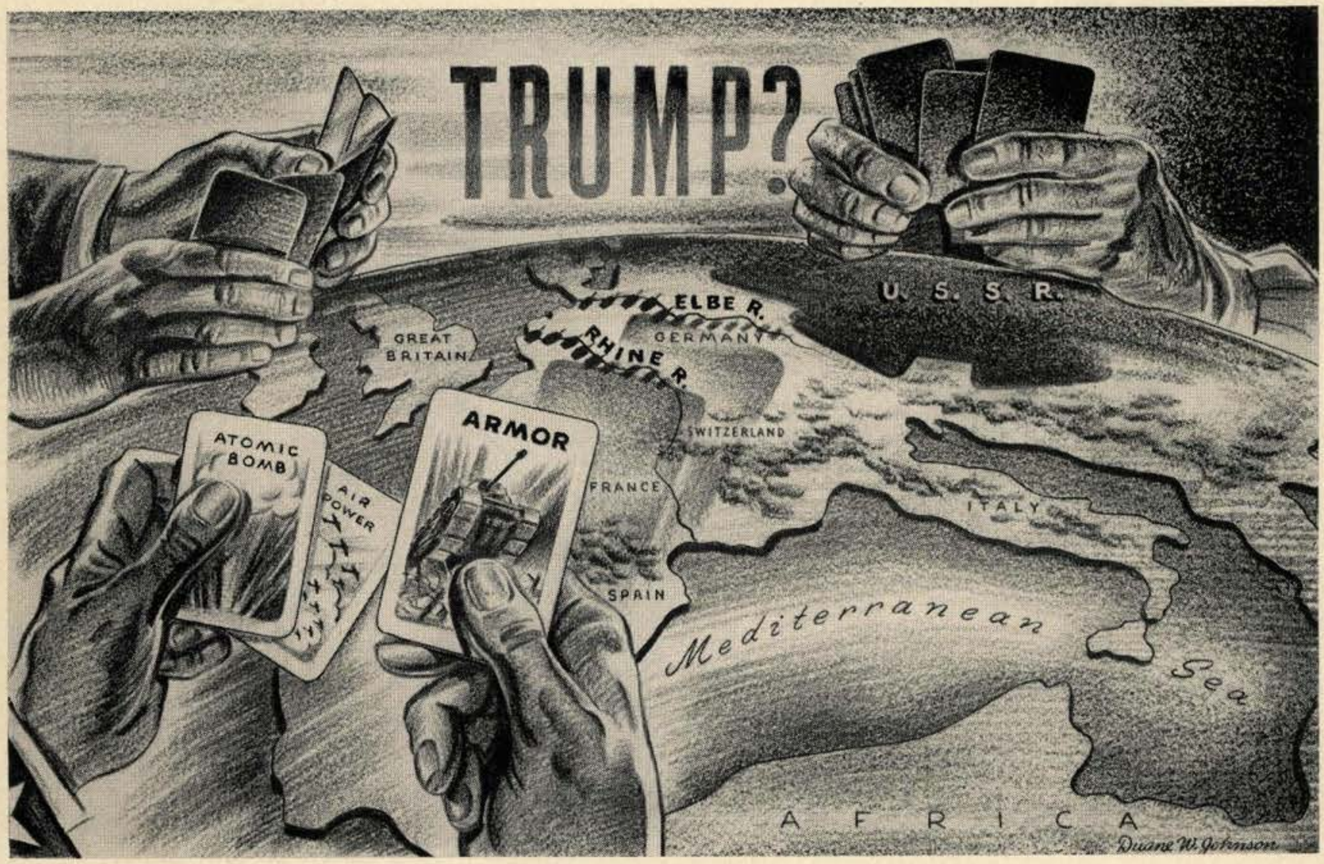
A Journal Feature Article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ARMOR
Duane W. Johnson

Armor must be the backbone of any military assistance program designed to support the North Atlantic Security Pact. Current discussions on the MAP have focused attention on American Armor. How will this key item show on the inventory of the Arsenal of Democracy? In this tentative period, where do we stand in a comparison of the Big Three Armor-producing nations of the world? An outstanding military analyst gives us his estimate of the picture.

The Decline of American Armor

by HANSON W. BALDWIN

CARDED

THE Atlantic Pact and its companion arms-aid program have focused the military spotlight primarily upon three weapons—the atomic bomb, tactical air power and the tank.

The atomic bomb today, with its implied threat to the heart of any nation, is unquestionably a political-military deterrent to aggressors, but when other nations have acquired a stockpile of bombs, the bomb will have far less importance as a deterrent. In the intervening period we must find a "substitute" for the atomic bomb, and that is the significance of the Atlantic Pact arms-aid program.

The military phase of this program is geared to the development of a small but highly mobile land-air team—cavalry of the land and the skies—quick-moving and with great fire power. In any such team armored forces must play a major role, for only by the liberal use of armor backed by mobile infantry and supported by superior short-range air power could an inferior land force hope to halt the massive movement of a great army.

It is for these reasons that armor—American armor—looms so large against the political landscape these days, and it is for these reasons, and because our tank deficiencies weaken our own defense, that the decline of American armor is of such serious portent.

Many Americans, filled with that confident, boastful optimism which is part of our frontier heritage, are unwilling to admit our deficiencies in anything; we have the best bathtubs, the best plumbing, the most cars; ergo, we have the best of everything. The pragmatism of the military mind generally is not quite so susceptible to this strange malady of wishful thinking as is the civilian mind, but our soldiers are by no means immune to this disease. The Army has not always been willing to face in the past our deficiencies in armor, but it is only by looking facts squarely in the face that we can lay the cornerstone of improvement.

Our tank weaknesses today are both quantitative and qualitative. The United States can never hope in peacetime—nor should it try—to match in numbers the massive armored formations of Russia. A nation, like our own with no "live" *land* frontiers, cannot justify politically or economically the continuous maintenance of huge armored units, even though it be recognized that in the future the American frontier will be on the Rhine or the Elbe, rather than at Cape Cod. But, acceptance—for political and economic reasons—of a peacetime inferiority in quantity of armor is all the more reason, and all the more challenge to American ingenuity, to compensate for numerical inferiority by qualitative superiority. Un-

Hanson W. Baldwin was graduated from the U. S. Naval Academy in 1924. He served three years aboard battleships and destroyers on the East Coast, and in Caribbean and European Squadrons, resigning as a Lieutenant (jg) in 1927 to take up a career in writing. He followed in the footsteps of his father, late Managing Editor and editorial writer of *The Baltimore Sun*, joining the *Sun* in 1928 for a period as "cub" and general assignment reporter. In 1929 he joined the staff of *The New York Times*. From 1937 to 1942 he served as military and naval correspondent for the *Times*. Since 1942 he has been Military Editor.

Hanson Baldwin is one of the most active of the military writers of our day. He writes from intimate, first-hand knowledge, gleaned from numerous trips and on-the-scene studies. He was awarded the Pulitzer Prize for his series of articles on the South Pacific, resulting from his coverage of that area in the Fall of 1942. He toured North Africa and England in the Spring of 1943, writing a widely acclaimed series of articles on the situation in the theater. He covered the Normandy Invasion and the fighting on the Continent. Among other things he attended the second atom bomb test at Bikini. His services are much in demand as lecturer and author. He has spoken before the National War College, Town Hall, the Armed Forces Staff College, the Air War College and the Command and General Staff College. His articles have appeared in a wide variety of national and professional publications.

Among his many books, Mr. Baldwin is author of the recently published "The Price of Power." He is in the process of gathering research relative to the writing of a history of World War II, which will take most of his lifetime, and will be published by Harper.

Just prior to the writing of this article, the author completed a visit to military installations in the ZI and Alaska, including Knox, Leavenworth and Hood, and covered the exercises held in Alaskan and Caribbean waters.

U. S. Army (MIS)

The Joseph Stalin tank. Is it the world's best?

fortunately we are today inferior in both quantity and quality of armored might, not only to Russia but possibly also to Britain.

On Paper—In Being

Today, the United States is maintaining four years after a war in which armor was a decisive factor, less than one full-strength armored division. The Second Armored Division at Camp Hood is scheduled to be expanded to 80 per cent of war strength, but at time of writing it is still some distance from that goal. The only other formation equivalent to an armored division is the mechanized constabulary in Germany, which now has sufficient punch and mobility to be classified as the equivalent of a division. In addition to these units, there are, of course, separate tank battalions, and armored cavalry regiments (light). The postwar tables of organization lend far more than lip service to armor; if they were actualities rather than tables our armored army would probably be the most powerful in the world.

The *type* field army of twelve divisions has—in the tables—some 3,333 tanks; there is one armored division in each corps, an armored cavalry group of three heavy tank battalions (some of them special purpose tanks like flame-throwers, flails, etc.) in each corps and an armored cavalry regiment (light) for reconnaissance in each corps. In addition, each infantry division has its own integral tank battalion and each regiment has its own tank company. The *type* field army of 1949 is truly an armored army—but on paper only; most of the units do not exist.

The United States today has some 17,800 tanks, most of them obsolescent. Most of these are in storage reserve; some have been issued to the National Guard for the two armored divisions and separate tank battalions and cavalry regiments which the Guard is supposed to provide. The Guard's armored units, however, are still in the earliest stages of training and organization; they are far from being effective fighting units.

The Other Two-Thirds of the Big Three

In comparison Russia's actual operating armored strength today is greatly superior to our own. Some estimates put her number of organized armored units at the equivalent of thirty-five to seventy armored divisions and credit her with a "stockpile" of almost 40,000 tanks and almost 20,000 self-propelled guns. Her production rate of armor is believed to be sizable; the USSR may be turning out for instance, as many as 1,000 Josef Stalin III heavy tanks annually. Although these estimates appear to this writer to be excessive, there is nevertheless, no doubt that Russia is maintaining armored units many times stronger than our own, and her production rate of armor is much larger than our present negligible peacetime output.

Britain's armored force, like our own, is small compared to Russia's, but the equivalent of one armored division plus the independent tank units she is maintaining represent a considerably greater concentration upon armor—proportionate to the comparative sizes of the two armies and of the British and U. S. populations—than in our own case.

This numerical inferiority in armor must be accepted in peacetime, although our disadvantage is greater than it should be.

But there is no excuse for a similar disadvantage in quality.

Performance, Not Equations

The deficiencies in the quality of our armor date back to the war. A tank can be judged—not by some mathematical equation in which gun power, mobility and armor are combined in some nicely balanced optimum item—but only by the test of the battlefield; is it better than the enemy tanks? So judged, our tanks of World War II failed. They possessed mobility—yes; and a higher degree of mechanical reliability than German tanks, but we were consistently out-gunned, often out-armored, and in boggy soil, the German Panthers and Tigers could usually outmaneuver our tanks.

Yet in four years of postwar design, our progress has been slow and disappointing. We are still outgunned, our-armored, and probably inferior in maneuverability to the Russian and the latest British tanks.

Family of Tanks

Our postwar objective has been to develop a "family" of tanks—a light, a medium and a heavy, in which the three clashing requirements of gun power, mobility and armor were nicely mated. We have abandoned—fortunately, this writer feels—what threatened at one time to become a fetish, the development of an "all-purpose" tank. There is no such thing, any more than there is a single all-purpose ship or plane.

Our concept of a "family" of tanks—though sound in concept, has been disappointing in development. Only the light tank—the T-37 and the T-41—with a 76mm. high velocity gun appear to be capable of favorable comparison with any other world tank of similar weight.

Our qualitative deficiencies in armor are particularly pronounced in the medium and heavy categories, and medium and heavy tanks, of course, are the backbone of any armored outfit.

The Patton Vs . . .

The best of our medium tanks is the M-46 General Patton, which is really a modified M-26. This tank has the same M-3 90mm. short-barrelled gun of the General Pershing, a gun which was scarcely a match for the newest models of the German 88mm. It has, however, new ammunition, which has stepped up the velocity of the projectile, and its 810 horsepower engine and cross-drive transmission, with improvements in the track and better fire control, make it a considerably better tank than its American predecessors. But at a weight of 47 to 49 tons, combat-loaded, it is apparently not a match for the Russian T-44 medium, or its predecessor, the wartime T-34. The T-44 weighs about ten tons less than the Patton, and yet mounts either an 85-mm. or 100mm. gun, and has the equivalent of eight to ten inches of frontal armor.

In the heavy tank category our deficiencies are even more pronounced. We have no standardized heavy tank today; a few prototypes of the T-29 with a 105mm. gun, and the T-30 with 155mm. gun are in existence, but at seventy tons, these tanks are too heavy and cumbersome and have too little mobility. The Russians, on the other hand, long have had a heavy tank which is the world's best. The Josef Stalin III probably weighs between 55 and 57 tons, perhaps slightly more, but it is certainly less than 60 metric tons, which is the maximum load which the average Soviet bridge is designed to carry. It mounts a 122mm. gun, has very wide tracks, and—though somewhat deficient in horsepower per ton of weight, by American standards—it has considerable mobility. Its prow-shaped bow is heavily armored and the armor is so angled that penetration from a frontal shot (the British estimate about 90 per cent of their tanks were "killed" by frontal shots during the war) is very difficult. The exact characteristics of the newest Stalin models are not known; different observers credit this tank with different armor thicknesses and horsepower. One set of specifications, which this writer believes is reasonably accurate puts the Josef Stalin III at 56 tons, 600 horsepower engine, low silhouette (eight feet, eight and a half inches high), 28″ track, 11.6 pounds ground pressure, glacis plate of 3.9 inches, sides, 3.5 inches, turret sides of 3.9 inches. The horsepower weight ratio in this and in the latest versions of the T-44 is inadequate, not only by our own, but by Soviet standards, and it seems likely that the J. S. III and the T-44 already are becoming obsolescent and may soon be replaced by more powerful models.

Russian Tank Characteristics

The gun power and armor of Soviet tanks are noteworthy, and their wide tracks and deep grousers give them flotation and maneuverability even in boggy terrain. The skilfully angled frontal armor reputedly gives the Soviet J. S. III tank crew the equivalent of ten to twelve inches of armor protection. On the other hand mechanical reliability, transmission, ammunition stowage, rate of fire, and fire control probably are inferior in the Russian tanks to our own, and Russian tanks do not have stabilized gun turrets. But if the proof of the pudding is fighting ability, there is not much doubt that the Russian tanks are powerful monsters, considerably superior to our own standardized tanks in combat characteristics, capable in fact of outranging and outgunning our best fighting vehicles. If T-44's and J. S. III's were matched against Patton's today in equal or near-equal numbers, the tragedies of Caen and the Orne when the German Panthers and Tigers picked off our Shermans long before our tanks were within lethal range, would undoubtedly be repeated.

The British "Universal"

British tank development has followed a somewhat different line than either the Russian, or our own. Field Marshal Montgomery's influence has helped to channel British postwar development along the line of the "all-purpose" or "universal tank" concept. Although this concept itself appears to be fallacious, the British execution of it has been brilliant. The newest British tank represents a happy blending of the talents of science, industry and the army. It is a very powerful medium armed with a gun which fires an armor-piercing projectile at terrific initial velocity; it is well armored, and its turret is one of the smoothest-training in the world. To me, it appears superior to the Patton, and the few U. S. "tankers" who have seen it are enthusiastic about it.

Our chief progress since the war has been in the development of what is essentially auxiliary equipment—engines, transmissions, suspensions, fire-control, gyro-stabilizing devices,

U. S. Army

The General Patton tank. Only an improved M26?

U. S. Army

From our World War Two peak in Armor, where do we stand today?

etc. A "family of engines" for tanks and automotive equipment, ranging in horsepower from 60 to 1,400 horsepower, has been developed, and there is no doubt that these engines are excellent, with reliability and ease of maintenance high. There has been however, some question as to their producibility; the new engines are somewhat complicated and do not fit in many respects the normal commercial pattern. Individual cylinder castings offer a particular problem, but the latest studies indicate that production difficulties are by no means insurmountable.

Mines, mortars, antitank guns (the Russians have long had excellent AT guns up to 100mm. in size), and self-propelled artillery are other elements of armored strength in which Russia is well advanced and our progress has not been too marked. Rockets, for field artillery use—first utilized by the Soviets during the war—have been pushed too slowly in the United States. No satisfactory airborne tank is available and progress in amphibious tank development has been slow.

Armored Tactics

Tactically, our basic armored concepts are sound—and as advanced as any, yet the "tankers" have sometimes had trouble in "selling" their ideas to other arms. The utilization of armor in mass—real mass, as much as 100 tanks per kilometer of front—is an essential principle of armored attack, yet it is one which we have tended to honor more by precept than example. Deep penetrations, rather than shallow ones, bold-ranging cavalry tactics after the breakthrough has been achieved are basically important if the mobility of armor and its capacity to disorganize and to frustrate are to be exploited. On the defensive we still tend to think too much in terms of linear defense, or at least in terms of too shallow a defense belt; on land—as in the air—the battlefield must now be measured in hundreds of miles, not yards, and deep defensive zones—flexible, resilient and feather-pillow defenses—are the only kind with real meaning in the age of armor, the bomb and the plane.

A New Program

It is heartening to temper these criticisms somewhat by recording that the first definitive tank development program in U.S. peacetime history has been adopted recently. But the proof of the pudding is in the eating; our armored goal is still far off.

* * *

Our armored deficiencies—in numbers, in quality and in tactical concepts, but particularly in quality—must be rectified if armor is to play the decisive role of Napoleon's cavalry, if indeed, armor is to prove itself a decisive weapon of the ground team. Mechanized warfare is—or should be—a "natural" with mechanically minded Americans. But in armored development we have yet to prove ourselves worthy of the heritage of Henry Ford and Detroit, of Chaffee and of Patton.

Russia Observes Tank Day . . . Invents the Tank . . . and Calls for New Successes

On September 11, Russia celebrated its annual Tank Day. The occasion was marked by a Pravda article authored by Marshal of the Armored Forces Bogdanov, claiming that Russia invented the tank. Stating that the first tank was made in Russia in May, 1915, the Marshal went on to say that "The facts show that the first tank designs appeared in Russia considerably earlier than people started to work on these questions abroad and that the first models of Russian-built tanks were constructed a year and a half earlier than similar machines appeared in Britain."

The Soviet Army newspaper, *Red Star,* noted that Russian designers have now built tanks which have no equal in the world. In addition, all papers carried the text of an order of the day by Armed Forces Minister Vasilevsky demanding new successes in the development of armored and mechanized armies.

The Military Assistance Program

"In the compact world of today, the security of the United States cannot be defined in terms of boundaries and frontiers. A serious threat to international peace and security anywhere in the world is of direct concern to this country. Therefore it is our policy to help free peoples to maintain their integrity and independence, not only in Western Europe or in the Americas, but wherever the aid we are able to provide can be effective."

Secretary of State Acheson, March 18, 1949.

[*As The* JOURNAL *goes to press MAP is on the agenda as must legislation for the current session of Congress.*—THE EDITOR.]

A Single Plan

The proposed program combines all of the foreign military assistance programs envisaged for the fiscal year 1950. The requirements of the requesting countries have been carefully studied to assure the most effective total allocation of United States assistance.

The needs of the five Brussels Treaty nations were examined through informal conversations and in studies carried out among their military representatives and those of the United States and Canada. Both in these conversations and in the studies made by the permanent Military Committee, established under the Brussels Treaty in April 1948, the requirements for defense have been determined.

Requests from Norway, Denmark, and Italy, also members of the North Atlantic Pact, and requests from Greece and Turkey have also been carefully screened by our Government. These reports were examined in the light of the purpose of the coordinated program, our own security interests in the specified area, and the requesting country's military production, its ability to use aid efficiently, its defense position and defense planning, and its relationship to over-all security coordination.

The program now before the Congress comprises a planned and coordinated response to all these demands upon United States resources. It is limited to the bare essentials of aid necessary, during the period proposed, to meet our world requirements.

The Cost of Military Assistance

The legislation proposed by the President would authorize him to spend $1,450,000,000 in the fiscal year 1950 for the purposes of the program. Of this amount, $1,130,000,000 would be provided to the other signatories of the North Atlantic Treaty in the form of equipment shipped from the United States and of funds for financing materials for increased military production in Europe.

Duration of the Program

Military assistance programs of the United States have been directed toward establishing in areas of the free world threatened by aggression the confidence and physical security which will make attempted intimidation pointless and unprofitable. In facing the predatory, world-wide attacks on democratic freedoms there is the continuing need to associate ourselves with vigorous, like-minded peoples who have a similar tradition of freedom.

The program now before the Congress is an interim program covering the most urgently needed military aid requirements of the fiscal year 1950. It is a program which will go into effect, if approved by Congress, prior to the working out of a common strategic concept through the machinery of the North Atlantic Pact.

Impact on the U. S. Economy

The National Security Resources Board, in consultation with other interested departments and agencies, has analyzed the probable effect of the proposed program upon our own economic and financial strength. The demands of the program for scarce materials such as steel, copper, and aluminum will be small and easily manageable. Since the expenditures in any one quarter of the fiscal year will be less than one-half of one per cent of our gross national production, the effects on the over-all economy will be slight.

Effect on U. S. Military Strength

The military assistance program will not weaken our presently authorized armed forces. The slight and temporary impact of the program on our own matériel requirements would be more than compensated by the improvement, in the long run, of the over-all capability of the United States and its partners to deter or to meet aggression.

Administering the Program

The executive-branch proposal envisions that the President will delegate to the Secretary of State by Executive order the broad responsibility and authority to administer the military aid program. Thus military aid may be best integrated into the over-all foreign policy of the United States and made consistent with our goal of world peace.

Within the Department of State an administrator for foreign military assistance would be appointed to administer the program and supervise the allocation of funds for the Secretary. The National Military Establishment would be delegated a large share of the responsibility for the operation of the program.

THE ARMY'S ROLE IN MAINTAINING THE NATION'S DEFENSES

by THE HONORABLE GORDON GRAY

SECRETARY OF THE ARMY

ARDED

I AM AFRAID that some well-meaning people of this country are laboring under the delusion that the United States Army is not as important as it once was.

I think many Americans have allowed themselves to accept the candy-sweet doctrine that the Atomic bomb, guided missiles, planes, rockets and supersonic speed have relegated the Army's GI Joe to an unglamorous bit part in helping to maintain the nation's defenses.

I submit that our Army was never more indispensable than it is today—that, in the alternating footlights and shadows cast on the world's stage by the sway and pull of international tensions, it never had a more important role, or one more impossible for any other service arm to fill. I submit that our very best guarantee against the possibility and ravages of war is to be adequately prepared to *wage* war on the dimensions that the laws of modern conflict demand—that is, on the ground, on and under the sea, and in the air.

If we fail to insure preparedness in any one of these dimensions; if too many of us accept the easy belief that if war should come we could end it in a matter of days or weeks with a few super weapons; if we sing each other to sleep with a lullaby whose lyrics proclaim that a foreseeable war could be won with a single Sunday punch by any one arm of the service—if we do these things, then we shall certainly be carrying the security of this country around in a paper bag.

It is easy to listen to the seductive and melodious strains of this song—easy because that is what we would like to believe, easy because it would make a war relatively painless, easy because it would deliver national preparedness in a pretty package and at nominal cost and sacrifice.

But it is a dangerous song, and one that will be certain to lure us into danger if we listen. It could lull this whole nation into a lethargy like that of the French who built themselves a Maginot Line, then in effect said comfortingly and soothingly amongst themselves: All right, we have an impregnable line, now, we are safe behind it. We can take it easy from here on out.

It would be fine if national preparedness did come in a neat package, delivered cheap. But it does not. It is costly, and complicated, and calls for sacrifice . . . and the American people, the final authority on our preparedness or lack of it, must realize this if we are to avoid useless risk for as far as men can see into the future. All of us must understand that neither now nor in the foreseeable future can national preparedness be provided by any one arm of the service—but only by all three, working together.

Please do not misunderstand me. I do not deprecate air power, nor do I regard the development of new scientific weapons with skepticism or "old fogeyism." On the contrary, I advocate undisputed air superiority for America, and I believe we should not allow any nation to outstrip us in scientific research and development. I am certain that air power will be the principal initial offensive weapon in any future war, and invaluable in defense. From the strategic and tactical viewpoint, it is an absolute must if this nation is to remain safe. What I do disagree with is the specious argument that airpower and super weapons, virtually alone, would be able to make a war relatively easy, and that as a result there is a dwindling need for Army forces.

Suppose—against our every wish—war should be forced upon us. Would we need an Army? Naturally, we would want to carry the battle to the enemy. Our success in so doing would depend on the maximum use of air power—but air power would have to have operational bases. The closer these bases were to the enemy, the more effective and decisive would be the action of the planes.

It is granted that our modern aircraft would conduct sorties across the ocean from North American bases, but if strategic bombing is to have appreciable effect it must be sustained and continuous. It follows that really effective bombing would come from bases much closer to any potential enemy than those we now maintain. Its effectiveness would increase as more bases were set up, nearer and nearer the enemy, farther and farther from America.

Thus we see that in case of any reasonably likely war we would have to set up bases in overseas areas—with the consent of the nations involved, of course. The fact that the bases would be nearer the enemy than to our own country would be a great advantage but—and this is important—some could be reached overland by mass armies of a European or Asiatic nation and others by relatively short hops by airborne Army troops.

Now—who would build these bases? Who would maintain them? Who would defend them against onslaughts of an enemy? Who would supply them? The answer is clear as a bell. Initially, and to the extent possible, the job would be done by ground troops of our allies. But any major war is total war, and eventually these tremendously important jobs would fall—as they fell in World War II—to our construction troops, transportation troops, combat troops, communications troops, supply troops, all made up of GI Joe with his feet on the ground—and largely furnished by the Army.

It would be utter folly to enter such bases without tens of thousands of Army combat troops, and the equally indispensable forces that maintain the equipment of the fighting man, insure that he has adequate ammunition and weapons, and in general keep him supplied with the means without which victory would not be possible.

Even the combined efforts of the Air Force *and* the Army could not be expected to hold and support such bases. I am sure that the distinguished and able Secretary of the Navy, Francis Matthews, can clearly demonstrate that the job could not be accomplished without a superior Navy which could keep the sea lanes open and protect from air and submarine attack the necessary movement of men and supplies across the sea.

There is another important angle: If war should come, no enemy would be sleeping at his gates while we moved closer to him, setting up bases. He would oppose our air and ground assault with air power and ground troops of his own. Moreover, he would be attacking America—if possible with whatever long-range weapons he had. He would be striking nearer and nearer to America, attempting with all his power to put the situation in reverse and build up to the moment when he could take our bases from us, occupy our land, and render us impotent.

If this country were about to be invaded, nothing would be more important than home defense—and no force would be better qualified than the Army to resist such attack.

Just a little serious thought shows up the fallacy of the belief that land armies have lost their usefulness. In event of war they would be indispensable, as usual, *everywhere*—not only to seize, build, hold and maintain overseas bases and to meet the foe there. Who else could provide the protection for our own atomic and other vital installations? Who else could offer greater resistance to possible airborne attacks? Who could better protect our cities against sabotage? Who would man the antiaircraft guns? Who would furnish the supplies and equipment? Who would train reserves and replacements that would most certainly be needed? Who would be in better position, in case the worst came to the worst, to stand on our own shores and meet the invading forces of an enemy?

The answers are indisputable. The Army would be called on to do these jobs. They would be jobs, of course, that would not exist in any push-button, presto, one-two type of conflict. But such unrealistic wars are waged only in the comic strips, and they have about as much reality as the derring-do hero who is immune to both time and danger, and the pretty girl who is always rescued despite ray guns and blinding explosions.

It is possible that such warfare will be developed sometime—but it does not exist today, nor will it tomorrow, or in the foreseeable future. And this is not my view alone. It has the support of those who know most about national defense—scientists, military leaders, historians, top men in business and industry.

Until such warfare does come into being, we in America must avoid useless risk by understanding that no arm of the service is an entity unto itself. Our accomplishments in the last war sprang from coordinated effort of all forces, each complementing the other and nothing has happened to give us any legitimate reason to believe that the same would not be true in any foreseeable war.

For real security we need a strong and superior Air Force. We need a Navy capable of performing those duties only a Navy can perform. And we need a ground Army that can beyond any doubt—in event of war—successfully undertake those missions a ground Army would most certainly be called on to undertake.

I am glad to assure you that your Army *is* prepared to carry out its functions, to play its indispensable role in maintaining the defense of America—if war should come—or to continue its peacetime usefulness.

Our Army is about 650,000 strong, and approximately 260,000 of these men are serving overseas. We are proud of this force and, even aside from the possibility of war and the necessity of maintaining trained ground troops against such a catastrophe, we take further justified pride in the manner in which this Army is discharging its current and equally indispensable peacetime role.

A FEATURE ADDRESS

In a Defense series over the CBS network.

In many ways, the Army's peaceful activities in these troubled days are as important as its duties in war. For instance, the job of occupation and of administering military government in conquered areas is so vast and comprehensive that its ramifications stagger the imagination. Nevertheless, in addition to all its other duties, the Army has had this responsibility in the Pacific since the war ended. Also, it still occupies Germany and until the recent appointment of John J. McCloy as High Commissioner, it administered Military Government there.

The Army's steady, day-to-day performances in the occupation areas, in providing defenses at home, maintaining our overseas bases, participating in rescue and relief work in floods, fires and other catastrophes, are not always loaded with glamor, and they do not always make the headlines—but such services are indispensable if the welfare and security of America are to be maintained.

This Army, like the vast majority of thinking Americans, is well aware of all these duties and responsibilities. It is the agent of the people, and in war or peace it stands—under orders from the people—as one of the bulwarks between them and the uncertainties and dangers of a tense world.

That is the Army's job. That is its role. With its sister services on the sea and in the air, it constitutes our best present hope for maintaining the peace of the world, or for *survival* if powers over which we have no control should draw us again into the holocaust of war.

CARDED

Assignment UNITED NATIONS

by LIEUTENANT GENERAL WILLIS D. CRITTENBERGER
Chairman, United States Delegation, Military Staff Committee

Today our military is as fully engaged in activities designed to maintain the peace as it is in activities destined to make it successful in war. Our personnel must think well beyond the troop duties of earlier times—to missions, to truce teams, to occupation. Here is the story of one of the most important of such responsibilities at the top level.

THE Military Staff Committee of the United Nations is little known to the public. Although it has met rather regularly twice a month during the last two and one-half years, its purpose and place in the world security scheme of things are not generally understood. Furthermore the infrequent attention accorded it in the press has hardly been indicative of its potential importance. To some extent, at least, this lack of common knowledge about the Military Staff Committee is due to its self-imposed restrictions of secrecy. Inasmuch as some of these meetings have involved discussion of highly classified matters, none are open to the public, nor are any of the official reports of its activities given public circulation. It is not intended here to disclose any of the details of its deliberations which have proceeded under this understandable veil of secrecy, but it is thought to be within the bounds of propriety to discuss its activities, insofar as they are of general interest to the armed services at large.

To evaluate the functioning of the United Nations, one must understand that the Security Council, by Charter is charged with maintenance of international peace and security, as follows:

> "In order to ensure prompt and effective action by the United Nations, its Members confer on the Security Council primary responsibility for the maintenance of international peace and security, and agree that in carrying out its duties under this responsibility the Security Council acts on their behalf."

The Military Staff Committee is set up by the Charter of the United Nations in the following words:

> "There shall be established a Military Staff Committee to advise and assist the Security Council on all questions relating to the Security Council's military requirements for the maintenance of international peace and security, the employment and command of forces placed at its disposal, the regulation of armaments, and possible disarmament.
>
> "The Military Staff Committee shall be responsible under the Security Council for the strategic direction of any armed forces placed at the disposal of the Security Council."

In other words, the Security Council of eleven members (five representing the World War II Allies, and six others elected for two years) which has the primary responsibility for the maintenance of international peace and security, has been provided with the Military Staff Committee to assist and advise in matters pertaining to this responsibility.

Public Law 216, 81st Congress (National Security Act Amendments of 1949) states:

> "The Joint Chiefs of Staff shall provide United States representation on the Military Staff Committee of the United Nations in accordance with the Charter of the United Nations."

In conformance with the above, the Chiefs of Staff of the three armed

General Crittenberger is the United States Army Representative on the Military Staff Committee, and the Chairman of the United States Military Delegation of the United States Mission to the United Nations. He is also the principal military adviser to the United States Mission to the United Nations, with offices in New York City.

In the Latin American field, General Crittenberger is Chairman of the Inter-American Defense Board, which sits permanently at Washington.

We believe that the comments of this Armored Cavalryman and World War II combat commander will be of interest to our readers.

services of the World War II Allies (United States, United Kingdom, China, France and U.S.S.R.) are represented by designated officers of these armed services, who sit the year round in New York City at meetings in the Manhattan Building. These representatives of the Chiefs of Staff of the World War II Allies are each assisted by a small staff.

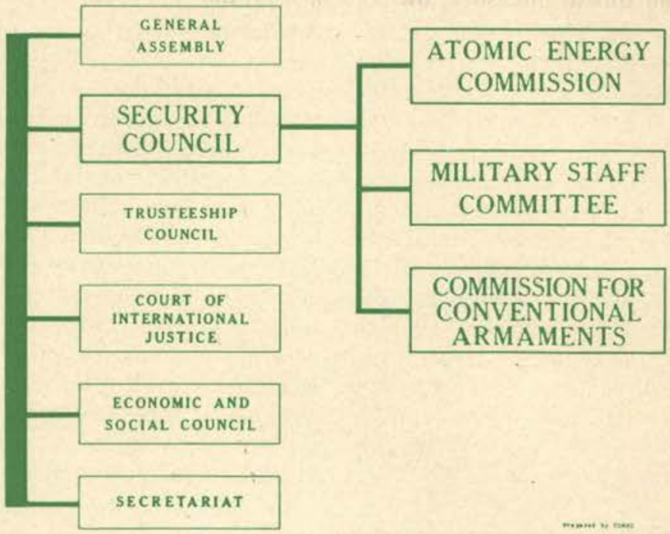
In keeping with the pattern of unification recently established by legislation for the Armed Forces of the United States, the United States Delegation to the Military Staff Committee is also unified, with an integrated staff and Chairman, who represents the President, the Secretary of Defense, and the Joint Chiefs within his sphere of military activity. In addition to their duties on the Military Staff Committee, the Representatives are also designated as Military Advisers to the United States Mission, headed by Ambassador Warren R. Austin.

As defined by the United Nations Charter the chief concern of the Military Staff Committee is the responsibility of member nations to contribute to the maintenance of international peace and security by undertaking to make available to the Security Council, armed forces, assistance, and facilities, including rights of passage, necessary for the purpose. Special agreement or agreements shall govern the numbers and types of forces, their degree of readiness and general location, and the nature of the facilities and assistance to be provided by these member nations.

Another organ under the supervision of the Security Council is the United Nations Atomic Energy Commission, made up of the member states represented on the Security Council, plus Canada, when Canada is not a member of the Security Council. The United States Delegation to this Atomic Energy Commission of the United Nations is headed by Mr. Frederick H. Osborn. No member of the Military Staff Committee is included in the United States representation on this United Nations Atomic Energy Commission.

The United States position within the United Nations on the subject of disarmament rests in the hands of a Commission on Conventional Armaments, on which Commission the United States representative is Mr.

ORGANIZATION OF THE UNITED NATIONS


GENERAL ASSEMBLY
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MILITARY STAFF COMMITTEE
COMMISSION FOR CONVENTIONAL ARMAMENTS

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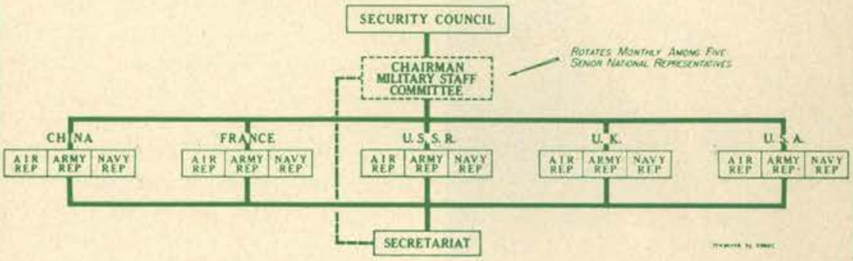
ORGANIZATION OF THE UNITED NATIONS MILITARY STAFF COMMITTEE


SECURITY COUNCIL
CHAIRMAN MILITARY STAFF COMMITTEE
ROTATES MONTHLY AMONG FIVE SENIOR NATIONAL REPRESENTATIVES
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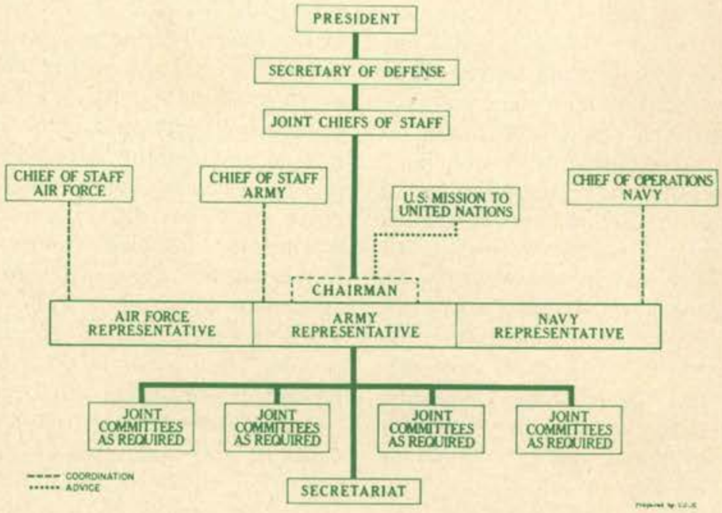
ORGANIZATION OF THE U.S. DELEGATION, UNITED NATIONS MILITARY STAFF COMMITTEE


PRESIDENT
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Frank Nash. It is pointed out that although the armed forces of the United States are directly interested in the question of armaments and disarmament, and therefore maintain close relationship within the structure of the United Nations with the activities of the Commission on Conventional Armaments, as is also the case in the United Nations Atomic Energy Commission, the Military Staff Committee is not directly represented on this Commission. However, the United States membership of both agencies, the Commission on Conventional Armaments, and the Atomic Energy Commission, freely consult the United States Military Advisers of the United States Mission.

U. S. Air Force

Lt. Gen. Hubert R. Harmon
Air Force Representative

In the sphere of activities which is of primary concern to the Military Staff Committee, that is the United Nations Armed Forces as prescribed in Article 43 of the Charter, a stalemate has resulted in which the majority (United States, United Kingdom, France and China) has not been able to reach an agreement with the U.S.S.R. The opposing points of view of the majority on the one hand, and the U.S.S.R. on the other, are so divergent to date that no agreement is anticipated unless concessions are made on one side or the other. So far there have been no indications that such concessions are under way. Instead, this divergence of viewpoint within the Military Staff Committee is little different from the chasm that generally exists between the East and the West in the other activities of the United Nations.

In the Fourth General Assembly which convened at Flushing Meadows in September, the tentative agenda includes some eighty or ninety subjects. Of these, about ten have military implications. It is the responsibility of the Military Advisers to the United States Mission to ensure that in these subjects having military implications, these military implications be presented accurately and adequately. In some instances this point of view, which has as its basis the security of the United States, is a very important factor; in others it is less important. It is needless to point out that in some instances, strategic matters involving the security of the United States may well be decisive.

In addition to the activities of the Military Staff Committee with reference to United Nations Armed Forces as outlined above, and the responsibility of the Military Advisers to the United States Mission, other Army, Navy and Marine officers of the United States are employed by the United Nations in certain areas as military observers. A total of 93 of these military observers are today being employed with effect by the United Nations. The activities of these observers in Palestine, Greece, Korea, Indonesia, etc., are frequently reported in the press. In Palestine alone there was at one time a total of 125 United States Officers of the Department of Defense. In addition, the distinguished United Nations services of Fleet Admiral Chester W. Nimitz, United States Navy, and General William Riley, United States Marine Corps, are known to newspaper readers the world over.

Opinion is understandably varied among the peoples of the world as to the over-all value of the United Nations toward the goal of ensuring world peace and security. Those who expect spectacular and immediate results in resolving the involved and explosive problems confronting world peace today may quite naturally feel pessimistic, particularly in view of the failure of the five powers to reach agreement on so many issues of outstanding concern to all peace-loving peoples. Any pessimism born of this feeling of frustration has been nurtured at times by the frequent discords of the major powers in consideration of the issues at hand. It should be significant, however, that the world's leaders and their representatives have not given way to despair for the United Nations. On the contrary, there is still an inclination toward optimism, which is heedful of the difficulties yet to be overcome. These optimistic leaders see the organization growing in self-confidence and authority, and have expressed the thought that the United Nations will develop through other crises to maturity. The organization is recognized by many as a formidable barrier to any attempt by a nation or group of nations to launch an aggressive war. Those who are hopeful for the United Nations feel that it presents a means of assisting positively in the drive toward peace.

U. S. Navy

Vice Adm. Bernhard H. Bieri
Navy Representative

Ambassador Warren R. Austin has said, "Our support of the United Nations must rest upon a realistic appraisal of the problems and forces operating within the international organization. We have great cause to be encouraged, but we have little cause to be satisfied."

The vital issues before the United Nations have now been clearly defined, with a Soviet block on the one side and the great majority of the members of the United Nations on the other, a majority which is determined to preserve world peace and enrich international life.

No informed person who has studied the United Nations can fail to have an emphatic realization of the complexities and alternatives inherent to these world issues of today.

In conclusion there is one thought

the writer would like to leave with the personnel of the armed services. Our President has taken a firm stand in support of the United Nations. Our Senate by resolution is also on record as committed to an understanding support of the United Nations. Thus we can expect our foreign policy to be strongly influenced by the United Nations. This position of our government in enthusiastic support of the United Nations is of specific significance to all military personnel.

The Armed Forces of the United States were created out of our American desire for freedom. Over the years these Armed Forces have not only fought off every attack upon our national life, but also have met every challenge. From the very start of our country, their mission has been to safeguard the national security. Since the beginning it has been their earnest resolve to do the job in a way that measures up to the expectation of our people, whom the Armed Forces serve, and of whom we are a part. In these moving times when military personnel find themselves on duties such as the Military Staff Committee, international missions, observers, joint boards, etc.—many of which duties seem far remote from those previous days of service with batteries, companies, battalions and regiments—they should not be daunted. Their activities in such capacities are still dedicated to that same purpose—the safeguarding of the national security.

Although the routine activities of United States military personnel assigned to the Military Staff Committee or as advisers or United Nations observers, sometimes seem to fall without the usual concept of the duties of a soldier, sailor or airman, it is nevertheless readily admitted by all that they have been used advantageously within the framework of the United Nations. Furthermore, it has been stated that in some cases they are performing technical services that could not well be performed by others without a military background. If the trend of the future is toward international negotiations and adjustments, then the United States must have available officers of the armed services who are experienced in this phase of international relationship, which, in the final analysis, represents civilized man's hopes and aspirations on the loftiest of planes.

at the current session

Address by Ambassador Carlos P. Romulo, Chief of the Philippine Mission to the United Nations, Upon His Election As President of the General Assembly, Flushing Meadow, New York, 20 September 1949

Fellow Delegates:

I am deeply grateful for the honor which the General Assembly has today conferred upon me and upon my country.

Our task is to carry forward the work of the United Nations. The Charter defines our goal, which is to make it possible for men to live better lives in larger freedom under a reign of peace founded on justice and universal respect for law.

We should not hope to achieve in four years the goal of many centuries of human effort. With good will we can bring it a little nearer to realization. Our labors in this Assembly shall not have been in vain if we can help mankind advance, by so much as one step, toward permanent peace.

UNITED NATIONS DAY—OCTOBER 24th

I think we have the opportunity to do just that. This session coincides with a turning point in postwar international relations. Though many formidable obstacles to world peace remain, the danger of a new war which overshadowed our deliberations in Paris a year ago has greatly abated. We must press this advantage and move boldly forward in the spirit of the Mexican resolution approved unanimously last year, which pledged the Powers to the peaceful settlement of their disputes.

The third session of the General Assembly was distinguished by an outstanding achievement in the field of human rights, for which reason it is sometimes called "The Human Rights Assembly." I hope that this session will earn for itself the title, "The Peace Assembly."

Standing foursquare upon the Charter, we can help to fortify the United Nations for the momentous tasks that lie ahead. And we can, through unstinted effort and with a modicum of good will, so arrange the conduct of our affairs that we may all share in the hope, which I now hold out to you, of completing our work within the limits set for the present session.

The Ten Years

THIS MONTH of September, 1949, has a great significance, marking as it does the 10th anniversary of the opening and the 4th anniversary of the closing of World War II. Full recognition should be accorded such milestones as these, which hold far greater import than the sorrow or joy attendant upon the respective occasions. It is their relation to the perspective of history that supplies the real impact.

The parallels apparent in a comparison of then and now are interesting. Even more engaging are the qualifications existing now whose evolution may be attributed to experience acquired then.

Many competent observers are impressed with the relation between Poland's status a decade ago and Jugoslavia's today. The Balkan area continues to be a center of unrest. The Middle East remains an area of prime interest. In the Far East the Chinese Communists at this moment hold roughly the same amount of territory held by the Japs at the end of the recent war. Germany's development is being watched and judged against her post-World-War-I resurgence. As was the

Let's Decide for the Arm of Decision

THE NAME of the branch should be Cavalry, of course," said Officer Number One. "Cavalry describes the role of the branch. You talk about Armor—it's merely a means of transportation. Cavalry is the mounted branch—what it's mounted on doesn't matter. The principles of mobility, fire power and shock action have been the teachings of Cavalry for years. And you can't toss history and tradition overboard."

"Armor is a new medium," said Officer Number Two. "I never served in Horse Cavalry, but I served with Armor during the war. It's the newest element of the Ground Forces. If you look in your dictionary you'll find that Cavalry means horses. There's no place for the horse in modern war. The term Armored Cavalry is a compromise. It should be one or the other, and I think it should be Armor."

"I resent you latecomers to mechanization trying to lay claim to the field," said Officer Number Three. "I'm Cavalry, and I served with the Armored Force back in the thirties, in the days when it constituted a professional hazard to be identified with armored service. I commanded Armor during the war, and I never came across a situation the solution to which had not been taught to me years before at The Cavalry School. If this modern trend must be served, I'll go along with calling the branch Armored Cavalry."

"Personally I don't care what they call it," said Officer Number Four, "but the thing should be settled one way or the other."

* * *

Any similarity between the opinions expressed and those of any living officers is by no means coincidental. It is a painful fact. To these may be added other combinations as well.

The branch has been going through this confusion for some time. The situation involves not only the name, but the branch insignia and even the representative color. At the close of the war there was a fine opportunity to join ranks and step off together. Some chose to walk individual paths, fostering difference instead of promoting unity. The subject remains one badly in need of definition. The professional grounding of the branch is derogated by the difference.

Today some of our officers wear crossed sabers, some the tank. The triangular insignia of Armor—which had its birth with our World War I Tank Corps, when the mobility of armor lay somewhere between that of a case in the late thirties, a totalitarian government inspired by a negative ideology is compromising the healthy security and peace of mind of the world of the late forties.

If these similarities are interesting, even more occupying are the points of departure in today's picture from the story of the other decade. Our country is free of isolationism. We are pushing key economic programs as a basis for a healthy, free world. The United Nations is in operation as a strong force for peace. And above all, we are joined with nations whose ideals run with our own, in a concerted program which precludes the shaping up of any such series of events as led up to World War II.

During the war we looked forward to its end with profound hope and desire for a return to full peace and the opportunity to live our lives free of the pressures that had become so identified with the Twentieth Century. Today, four years after an occasion that in some ways seems to have fallen flat on us, we know what we have to live with—and we are adapting ourselves to the circumstances, while striving toward the ultimate goal.

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turtle and a World War II pillbox—is looked upon by the Heraldic Branch of Quartermaster Corps as an off-the-elbow monstrosity completely without the bounds of heraldry.

What does this all add up to, aside from confusion? Should the name be Cavalry, Armored Cavalry, Armor, or something else? Should the insignia be crossed sabers, sabers superimposed on a modern tank, the tank, or something else? Should the color be yellow or green or something else? Should the Heraldic Branch be asked to submit suggested designs to replace the colorful triangle? Recent panels at Monroe and Knox have dug into the matter in some of its phases. The first, technical in nature and pertaining to equipment, organization and doctrine was of necessity a closed session. The latter, revolving around the branch matters, has been similarly labelled by some who heard of it tardily and by hearsay, several of whom felt qualified to express before the board their opinions on branch and insignia.

The most recent development is Senator Tydings' bill, S.2334 (HR5794) read before the 1st Session, 81st Congress (in June) and referred to the Committee on Armed Services. Labelled the "Army Organization Act of 1949," Section 404. (a) of Title IV, Repeals, Amendments, and Saving Provisions, reads in part as follows:

> *The Armor shall be a continuation of the Cavalry; the Artillery shall be a continuation of the Field Artillery and the Coast Artillery Corps; and the offices, positions, branches, corps, services, components, and organizations referred to in this Act shall be continuations of corresponding offices, positions, branches, corps, departments, services, components, and organizations previously authorized or existing.*

Obviously all members of the branch could not appear before a panel to register their thoughts on this vital subject. Your Association (and Journal) is the logical place to secure the expression of opinion that should provide areas of thought for those who will make the final decisions. We are interested in carrying out that responsibility as a contribution to the solution that will put us all on solid ground from which the Arm of Decision may step forward to new accomplishments in the old tradition. Whatever the final action may be, we bespeak the wholehearted cooperation of all.

Let us hear from you.

CARDED

Mechanization of the Amphibious Attack[*]

by LIEUTENANT COLONEL ARTHUR J. STUART

APART from conventional and atomic aerial bombardment, which we may leave for others to discuss and dispute, World War II produced three major innovations in warfare—the mechanized attack, the amphibious attack, and the airborne attack. Prior to the recent war, these new types of attack were in the embryonic stage. However, their wartime development was rapid and they skyrocketed from the category of minor, somewhat experimental, special operations to become primary instruments for the projection of military power through which strategic decisions were repeatedly achieved. And, although mechanized, amphibious and airborne attacks were employed in coordinated and supporting combinations, sometimes simultaneously, it is not at all surprising that the next step, integration, was not achieved. World War II was too short to produce in anything resembling integral form either the amphibious-airborne attack, the airborne-mechanized attack, or the amphibious-mechanized attack. Nevertheless, such integration is logical and is clearly indicated for the future. And World War III, should it come, will probably bring the advent of all three.

There are indeed great possibilities in the crossbreeding of these three types.

The mechanized attack is a form of land attack. By virtue of superior fire power and mobility, it is today recognized as the *decisive* form of land attack. The amphibious attack is an attack from the sea, the airborne attack an attack from the air; both however include a land action phase characterized in the past by relative weakness. This weakness has been offset, at least in part, by the advantages of surprise and initiative resulting from the mobility upon which the success of these forms of attack has really depended. It follows that proper mechanization of either the amphibious or airborne attack would improve the quality of the land action phase. From the broad viewpoint, strategic mobility would be greatly increased in either case.

The third combination, the partial integration of the amphibious and airborne attacks, offers a potential increase in the mobility of the amphibious attack, strategically or tactically depending on the circumstances. From the airborne point of view, it would provide increased weight, power, and versatility.

The Amphibious-Airborne Attack

Taking the last-mentioned combination first, let us consider the amphibious-airborne attack. It has most frequently been visualized by students of amphibious warfare as either (1) an airborne attack from the sea involving a helicopter ship-to-shore movement, or (2) an airborne movement to the objective area by seaplane transports.

Both offer intriguing possibilities worthy of investigation. But large-scale realization of either in the near future is most doubtful because of the technical obstacles involved. The amphibious-airborne attack (as presently conceived) has a further limitation in that the landing force would not be mechanized. The attackers would be at a tremendous disadvantage if confronted by hostile armor. In consequence, the amphibious-airborne attack, without mechanization, would probably be effective only in theaters precluding the employment of armor.

The question then arises whether either of the two previously described forms of amphibious-airborne attack could include a mechanized landing force. In both cases the limitations of associated matériel are so serious that this development seems very unlikely even in the distant future.

The Airborne-Mechanized Attack

The second combination, the airborne-mechanized attack, offers greater immediate and long-range possibilities. General Gavin and other authorities on airborne war have discussed at length in their postwar writing the potential advantages of combining the strategic mobility of the airborne attack with the tactical mobility and power of the mechanized attack. They have pointed out that the hostile rear (the decisive objective of the conventional mechanized attack) could be reached by vertical envelopment without the usual costly, time-consuming penetration. Some go further and predict that the airborne force must have armor in quantity even to survive. The theoretical concept of the airborne-mechanized attack, incorporating optimum strategic and tactical mobility, is *incontrovertibly sound;* but, as in the case of the amphibious-airborne attack, there are serious matériel problems to be overcome. It is axiomatic that the mechanized attack must be powerful to be successful; and any separate mechanized force landed by air, and initially isolated deep in the hostile rear, would necessarily have to be strong indeed—not less than several hundred armored vehicles. This requirement cannot be met by existing air transport in the case of heavy tank components, and only limited numbers of medium and light tanks and vehicles of comparable weight can be landed—and then only when landing fields or particularly favorable terrain exist. The future of the airborne-mechanized attack is thus tied to the development of air transport, which promises to be slow; certain practical limits (apparently) have already been approached in air transport design. Realizing this, airborne-mechanized enthusiasts have called for the development of a new family of light armored vehicles. However, the dominant weapon in mechanized combat is the tank; and

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[*] Reprinted through courtesy of *The Marine Corps Gazette.*

In which Armor finally makes the First Wave of the Amphibious Attack—where The Journal has long felt it should be. A Marine Corps authority looks to a future well advanced over the foot-paced operations of the late war—operations that make use of Armor's decisive characteristics—mobility, fire power and shock action—to accomplish Armor's decisive roles—breakthrough and exploitation.

unless a family of lightweight tanks can be developed with new and vastly superior characteristics to give them fighting power equal to conventional tanks, the capabilities of such a force would be severely limited. The disadvantage would become acute if operating against conventional heavy hostile armor. Indeed survival itself would be doubtful. Thus, the airborne-mechanized attack, although perhaps holding theoretical promise of revolutionizing warfare, is yet a long way off. Practical realization is *entirely dependent upon revolutionary new developments in the design of air transport or armored vehicles.*

The Amphibious-Mechanized Attack

In our search for possible forms of super-attack through combination of World War II's recent contributions to the offense, we come finally to the amphibious-mechanized combination. Because the amphibious and mechanized attacks were developed and employed, for the most part, quite independently on opposite sides of the globe, those with experience in the amphibious and mechanized fields are generally unfamiliar with the other. This is probably the reason that this most promising combination of all has to date been largely overlooked. For the amphibious-mechanized attack not only offers great theoretical possibilities—it is also practical on a general scale today.

It provides the maximum combination of strategic mobility, tactical mobility, and power realizable today. Therefore, it may be forecast as the next major development of the amphibious attack (and also of great import to the mechanized offensive of land warfare, as we shall see).

Mechanization would not only greatly extend the capabilities of the amphibious attack, but from many considerations actually appears to be essential to its future success. It is generally conceded that the postwar modernization of the amphibious attack of World War II must be thorough and fundamental. Future amphibious doctrine must provide positive solutions to certain serious problems which may be forecast now for the future—or the amphibious attack will be in danger of reverting from its newly established position of preeminent success to its previous limbo of the desperate gamble. There are many compelling reasons which dictate that when the amphibious attack completes this metamorphosis it will emerge with a hard shell of armor.

A Concept of Mobile Defense

Both geography and current military trends abroad indicate that defense against amphibious attack will be mobile rather than a fixed infantry beachline defense. The military world has seen the consistent defeat of the fixed infantry waterline defense, and has had ample opportunity to note its ineffectiveness in stopping the amphibious attack. Yet, if any future enemy had not learned that lesson, simple geography would largely preclude its use in theaters involving coasts hundreds or thousands of miles long. Linear coastal defense would require prohibitive dispersion and dissipation of strength. The mobile defense built around armor, artillery, and aviation is logical from every consideration. *It is so logical that it must be anticipated and its impact on the amphibious attack carefully evaluated now.*

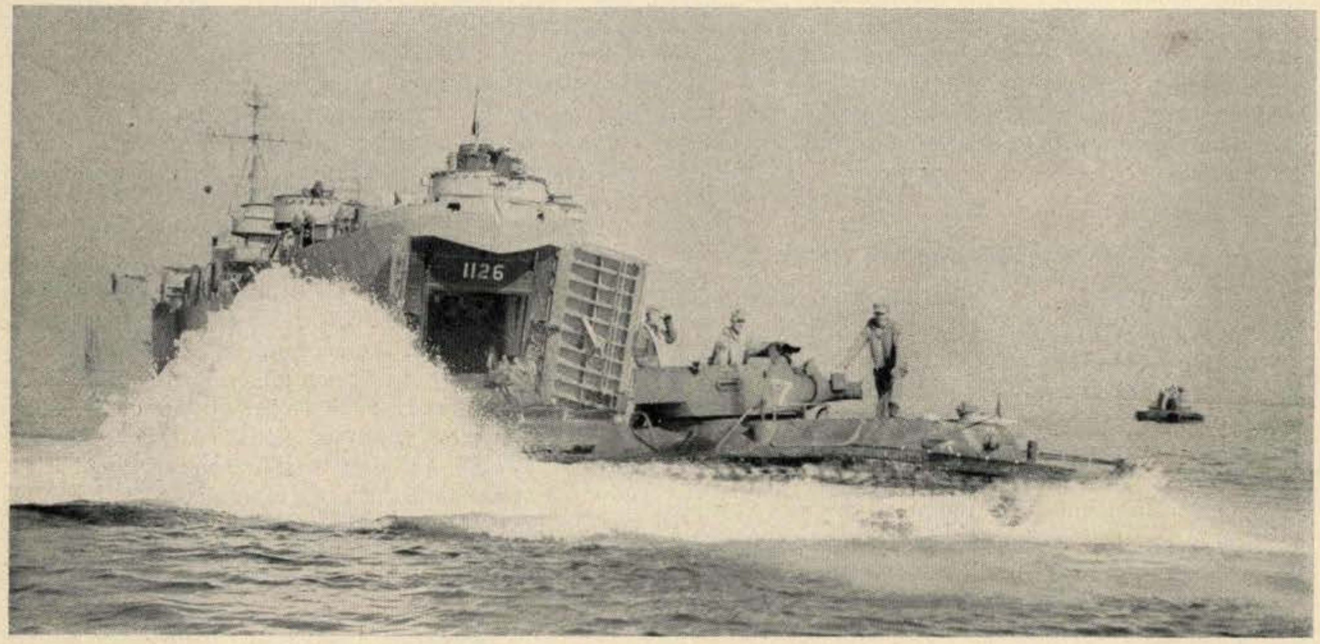
The amphibious attack of the past is geared too slow to cope with the geographic time and space factors of future amphibious theaters. It is poorly adapted to cope with the most probable type of enemy defense. The issue of battle is always decided, in the absolute sense, by the determinants of fire power and its control, or, in short—*by fire.* If an enemy can effect a more rapid build-up of fire power at the landing area, the amphibious attack *will inevitably be defeated* and be thrown back into the sea. Just as certainly, if at any time during or after a landing the enemy can bring to bear equal (or even inferior) forces of greater mobility—the landing force faces the same fate through defeat in detail.

A Mobile Amphibious Attack

Something, then, must be done about the amphibious attack. It cannot remain frozen in its World War II form, despite brilliant success under World War II conditions. If it is to cope with a mobile defense, its tempo must be stepped up so that objectives can be seized prior to the build-up of the enemy's forces even though they be highly mobile. Final beachhead lines, key terrain features—all will have to be seized much more rapidly than hitherto. This cannot be done by infantry attacks; foot infantry simply cannot move rapidly enough. *But it can be done by mechanized attack.*

In addition to these over-all considerations, there are specific weapons likely to be employed in strength by any future enemy for which the amphibious attack must find answers.

The probable deluge of airburst projectiles calls for a definite antidote. For there is a density of airburst artillery concentration, easily calculated, through which slow moving, unprotected, dismounted assault troops simply cannot move and survive in effective strength. Such fires, had they been maintained for only a few minutes over the beaches of the last war, would have destroyed or crippled landing force assault power. Although more effective naval gunfire and air bombardment may be expected, it unfortunately remains extremely doubtful if either arm will be capable of destroying more than a minor fraction of the enemy's artillery before a landing. Artillery is never placed along the waterline, that zone smothered and pulverized by bombardment; it is either dispersed, dug-in and concealed well inland to fire from position, or held in reserve deeper inland to be displaced rapidly to the landing area as the landing develops. Hostile artillery alone is capable of inflicting disaster on the amphibious attack of past slow tempo and concentrated targets. And if an enemy curtains his artillery firing positions by smoke during actual firing—what is the amphibious answer to the defender's artillery? The answer is armor, armor for all assault elements. The answer is the *mechanized landing force* to develop power swiftly ashore, to drive rapidly over and beyond the beaches, to gain quickly dispersion space ashore and to seize the enemy's observation and artillery positions through a lightning blow.



U. S. Marine Corps

Mechanized amphibious training today is improving on World War II methods . . .

Armorproofed Amphibious Attack

But future landing forces must not only be resistant to airburst artillery fire: The future amphibious attack must expect, and be proofed against, armored counterattack at any time during and after the landing phase. From the amphibious viewpoint the modern tank is a most formidable potential antiboat gun—armored, self-propelled, and capable of accurate, semiautomatic, long- or short-range, cannon fire. It may be stated categorically that if a landing force ever allows any large number of hostile tanks to penetrate to its landing beaches, its ship-to-shore movement will be most seriously jeopardized.

Positive antitank protection of the ship-to-shore movement will dictate the early landing of tanks in strength, for assured antitank protection is largely predicated upon superior tank strength. Obviously, time factors will become of critical importance in the seizure of critical terrain features.

Over and above the need for positive antitank protection of the ship-to-shore movements, landing forces newly established ashore must themselves be capable of withstanding armored counterattacks. This again means tanks in strength. It also virtually imposes the general mechanization of the landing force to provide equal or superior mobility to the enemy's. The alternative of inferior mobility would not only prohibit any real antitank defense but would also seriously prejudice, if not preclude, successful offensive maneuver.

However, the mechanization of the amphibious attack has broader significance than mere essential modernization. Beyond offering the greatest certainty of success, the mechanized landing force would give the amphibious attack new usefulness and broader capabilities.

The amphibious raid could be made a powerful and fearsome thing—capable of striking objectives deeper inland with much greater rapidity and far more devastating effect than hitherto.

The diversionary amphibious attack (in support of land operations) would become far more diversionary to the enemy if the landing force were mechanized—and so that amphibious role would become more effective.

And there is more. *The usefulness of the amphibious attack to seize a beachhead for the initiation of land campaigns would be vastly increased.* If a future mechanized landing force can seize a beachhead within a period of hours—rather than days or weeks as in the past—*the gain in strategic-tactical surprise for* subsequent land operations (of all types) would be great. In the case of armored operation this gain would be of the *utmost importance,* for the seizure of beachheads has hitherto been *too slow* to permit the advantageous launching of armored operations from them. This slowness has permitted the enemy to build up his forces in containment before beachheads had become established to a usable degree, in effect requiring a breakthrough before armor could possibly spring inland in exploitation. Thus, the past *slow speed* of the "infantry" amphibious assault has in itself seriously restricted the initiation of land campaigns from beachheads; in fact, lack of "amphibious velocity" alone has (to date) precluded the direct initiation of mechanized land operations from a beachhead, and so has robbed the amphibious beachhead of its direct usefulness from the armored viewpoint.

Breakthrough and Exploitation

Analysis of trends in ground warfare reveals two general phases of the offensive—the breakthrough and exploitation. Breaking through the enemy's immediate forces is but of local significance unless the local victory is exploited. The exploitation phase is the decisive phase, with the breakthrough but a necessary preliminary. Armored units moving with maximum speed achieve the destruction of the entire force by striking directly at the enemy's rear establishment, his command and logistics installations, communications, and reserves—the very heart of the enemy military machine, not its tentacles. It is in the enemy's rear, where coordinated and strong defenses do not exist, that the mechanized attack can drive to decisive objectives before the enemy can bring his mobility and power to bear.

But all this depends on gaining the hostile rear. It could be gained by sea envelopment, rather than through the siege tactics which in the past often have given the enemy sufficient time to mass armored reserves to prevent or limit exploitation. Beachheads in the hostile rear could be seized from which armored units could attack the hostile front from the rear to effect rapid penetration. The main armored forces could then follow up for the decisive exploitation—or perhaps strong armored forces could be moved around the enemy's sea flank to initiate exploitation operations against major hostile rear objectives directly from the beachhead. In either case, the decisive blow could be delivered with far greater surprise than through the conventional breakthrough, and certainly with far less cost.

To pursue this concept further, the enemy's problems of defense in land warfare would immediately be multiplied. In the past the enemy could establish a continuous defensive zone in depth, echelon reserves and otherwise concentrate his forces to advantage along a linear front. However, it would be manifestly impossible for him to achieve any such coordinated defensive strength also along his entire coast line. Thus the threat of sudden mechanized (or even infantry) attack in flank or rear from "beachheads which weren't there the day before" would pose for the enemy an extremely difficult problem.

So if the success of the future mechanized land offensive depends so largely upon gaining the hostile rear as it has in the past, exploitation of amphibious mobility as described could not but result in great new advantage. As offensive armor thus increased its mobility, defense against it would become proportionately more difficult. *The lightning amphibious seizure of beachheads by mechanized landing forces is thus a major potential corollary of the mechanized land offensive.*

But there may be some who will say, "it sounds good, but it's not practical!" It may be averred that shipping limitations are insurmountable, that a limited beachhead must first be seized to permit the assembly and coordination of fighting vehicles ashore before commitment, that the mechanized landing force cannot be supplied, that artillery support cannot be provided, beach mines and obstacles cannot be overcome—and so on. There are indeed practical problems. But all can be resolved.

U. S. Coast Guard

. . . such as this foot landing and assault on the Leyte beach.

Making the Combination

The amphibious and mechanized attacks are both well known, tried and proven. With vast experience in each and complete mastery of the execution of each separately, *the problem is really but a matter of adaptation of the mechanized to the amphibious.* The practical task assumes smaller magnitude when considered in this light, for there is actually a great deal to go on.

All general characteristics of amphibious and mechanized combat support and favor the realization of the amphibious-mechanized attack. The beach assault always has been, and always must be, launched against defenses weak at the time of assault—weak either as a result of surprise effect or through reduction by pre-landing bombardment. In land warfare the mechanized attack has been most successful against weak defenses. The essential conditions for successful mechanized action in respect to immediate hostile capabilities thus already exist in the amphibious attack. Denial of the air to the enemy is already a requisite of the amphibious attack. It is highly favorable, if not essential, to successful mechanized action. The amphibious assault depends on overwhelming power for success, as does the mechanized assault. Very strong air and naval gunfire support is available to the amphibious landing force; vehicle-borne forward observers and limited modification of control techniques are all that is needed to adapt this support to the increased tactical mobility of a mechanized landing force. Thus, the major over-all conditions essential to success exist with remarkable similarity in the mechanized and amphibious forms of attack.

No Need to Wait

Mechanization of the landing force need not await, and is not contingent upon, either the evolution of new amphibious matériel or the birth of a new family of armored vehicles. Present amphibious shipping, landing craft, and other matériel can transport and land a fully mechanized landing force. All classes of armored vehicles, including heavy tanks, can be landed—either directly from landing craft or equipped with flotation devices and launched close off the hostile shore. Moreover, armor can be landed in necessary mass. It will be recalled that the World War II amphibious attack comprised a great many armored vehicles, including tanks, armored amphibians, and amphibian tractors. Each assault division in Pacific operations normally landed some 50 tanks, 75 armored amphibians and over 200 amphibian tractors in the general assault, followed by hundreds of wheeled vehicles. In the Normandy landing the first two assault waves of certain units consisted solely of tanks, with self-propelled artillery landed in strength in the first hour of the landing. Even though special conditions precluded any general mechanized action ashore in Pacific operations, it will be recalled that more and more combat vehicles were added to the Pacific amphibious attack—until it became *fully mechanized in the over-reef beach approach but reverted to primarily dismounted action at the beachline*. The mechanized amphibious attack that we visualize for the future is but one step further—a mechanized attack *over and beyond* the hostile beach—the feasibility of which has been amply demonstrated.

Historical Example

In searching for historical precedent the reader may recall the spectacular (if small-scale and somewhat abortive) mechanized thrust over the Saipan beach on 15 June 1944. Some may see little significance in that successful drive over the beach and some 2500 yards inland by an armored amphibian company, since the light force was driven back by tank-led counterattack about four hours later with the result that the ground gained had to be retaken by costly hours of fighting. However, on more careful thought, can that remarkable exploit be evaluated as other than the strongest evidence of the practicability of the mechanized amphibious attack? Employing vulnerable armored amphibians instead of tanks, without any type of direct support, without covering infantry or engineer assistance, and even with open flanks because of failure of adjacent units to drive home the bold maneuver—that small force yet drove deep inland close behind the pre-H-hour bombardment, capitalizing on its stunning effect to overrun rapidly a once heavily defended and fortified area in a matter of minutes. Even then the daringly gained salient might have been held—permitting much earlier landing of artillery and reserves as well as greater dispersion ashore (with probable reduction of casualties suffered from Japanese artillery and mortar fire)—had follow-up troops but been pushed rapidly behind the mechanized assault. Lack of depth and failure to provide support constituted the true causes of the failure. But the very fact that the unsupported Saipan mechanized amphibious task force could achieve the success it did should dispel all doubts concerning the practical potentialities of the large-scale, tank-led, fully supported and properly coordinated mechanized amphibious attack.

Accepting the mechanized amphibious attack as a desirable and practical development of offensive warfare, its successful application is but a matter of adequate tactics and techniques. No new principles are involved. That which is new lies simply in the substitution of the mechanized for the infantry in the composition and tactics of the landing force. The mechanized landing attack will still be basically amphibious and the landing force will still have the same basic tactical role: to fight its way ashore, over the beaches, and to objectives inland.

Just as the landing force successfully adapted infantry tactics to amphibious warfare the mechanized amphibious attack can be developed most logically through the adaptation of proven mechanized doctrine.

The Basic Principles

This being so, it is germane to review briefly the cardinal principles of the amphibious and mechanized attacks if that which we shall arrive at is to be sound.

The amphibious attack exploits naval strategic mobility to strike the enemy (ashore) with a high degree of surprise. It uses maximum offensive power against minimum defensive counterconcentration. The strategic movement to the objective area is a naval operation (although of obvious import to the being and status of the landing force) depending upon effective naval and air dominance—isolation of the route of movement and the objective area. Aside from vital protection against strategic-tactical hostile interference, the ship-to-shore movement although physically a naval process is in essence *a landing force maneuver* constituting the landing force's assembly, deployment, and assault-approach (all on water) to seize the initial land objective—the foreshore. Action beyond the beaches, upon which the final execution of the over-all amphibious mission depends, is primarily landing force in nature, with the naval role but assisting.

It is thus evident that the ship-to-shore movement and beach assault is the core of the amphibious operation, and its most difficult and vulnerable phase. Directly derived therefrom are the following important amphibious principles. The hostile capability of reaction must be *weak* at the hour and place of assault. The landing area must be *isolated* from outside interference during the critical period of landing. The assault spearhead of the landing force must move at maximum speed and be so composed and so deployed as to provide maximum assault power. It must be protected by maximum support and must present a target of minimum vulnerability. The landing force must constitute a cohesive and controllable tactical entity during the critical ship-to-shore movement and beach assault.

As a final but no less important principle, the ship-to-shore communication route must *be kept open* to permit the positive and rapid build-up of landing force potential ashore and to insure continuous logistic support.

The essential principles of the mechanized attack must also be clearly understood; for they must also govern the makeup and tactics of the mechanized landing force, and will largely determine the nature of action ashore.

Speed, Mass and Fire Power

Above all else, the mechanized attack depends on *speed, mass, and fire power*. Success is achieved through swift, violent, locally irresistible onslaught, rather than through siege tactics.

Speed is achieved through machine movement and the *complete mechanization* of all arms to attain a balanced entity of combined arms capable of rapid movement and action in concert.

Power is derived essentially from the fire capabilities of the direct-fire application of the field gun and machine gun, mobile and armored as *embodied in combination in the tank*. To understand mechanized combat, the tank must be appreciated for what it is—a composite weapon comprising the two deadliest weapons of ground warfare in highly mobile form and with a degree of invulnerability through armor superior to other applications of the same weapons, enabling their close-range, direct-fire use in the assault. The tank arm, is however quite impotent alone, and is dependent upon complementing mechanized infantry, artillery, engineers, and reconnaissance and upon air support.

The principle of mass dictates a strong initial force and an adequate follow-up force, for military mass always has depth. The principle of mass is reflected tactically in the commitment of the mechanized force available in concentrated form in a minimum number of important zones leading to decision. It dictates narrow frontages and the projection of power almost exclusively to the front, with supporting fires fixing and neutralizing the enemy on the flanks and mechanized or motorized follow-up troops securing the rear. The consecutive, rather than simultaneous, seizure of objectives is a tactical derivation of the principle of mass and is consistent with the associated mechanized principles of centralization of control and economy of force.

The mechanized force must be protected on all sides by a reconnaissance screen, which also normally provides a major part of the detailed information of terrain and the enemy upon which movement and disposition for battle of the main force is based.

Shock effect is greatest when the capability of resistance at the time and place of mechanized onslaught is weak. This favorable condition is brought about either through striking suddenly at a time and place unexpected by the enemy or by intense bombardment.

Antitank weapons and antitank means are the only element of the hostile force potentially capable of decisive interference with the mechanized attack. Therefore, as an important principle, the hostile antitank capability must be carefully evaluated and the enemy's antitank defense destroyed or neutralized.

Parts of the Whole

The mechanized assault, driven between and following supporting fires, consists of massed medium and heavy tanks, mechanized infantry and engineers. Assault power is strengthened by integral vehicular-borne means for the precise control of artillery and air support. Infantry provides fire support using vehicular weapons, and infantry and engineers remain mounted at all times unless forced to dismount by direct hostile fire, by the nature of terrain, or to execute special missions. In zones of high trafficability the necessity for dismounted infantry action is reduced, being largely proportionate to the enemy's continued ability and will to fight when subjected to intense tank fires following his battering by supporting fires. When forced to dismount from carriers, infantry deploys and generally adds its highly flexible and versatile, if light, fire power to the tanks'. Carriers are called forward and the infantry resumes its mounted role as soon as conditions permit.

Engineers play an obvious and vital role upon which vehicular mobility—and so the mechanized attack—directly depends.

Finally, mechanized action is entirely dependent upon logistic support. Without fuel and ammunition being fed forward in a steady stream through a flexible system of delivery, the most powerful mechanized force becomes immobile and impotent in a matter of hours; without adequate vehicle maintenance it will have no staying or recuperative powers, and will just as surely if not as rapidly become enervated.

In the amphibious-mechanized attack, that phase up to the water's edge will be largely as hitherto with minor though vital adjustments to mechanized requirements. The land phase will require somewhat more extensive changes. The over-all pattern begins, however, to take shape.

Missions

The first difference may be the mission. The mission could be a conventional one to seize and defend a naval or air base, to seize a beachhead for further land operations (particularly armored operations)—or it could be a somewhat broader mission to destroy a particular force or installation, to sever and block communication routes, and other such missions which could be executed by raid or sudden thrust. The former type mission will entail the much more rapid seizure of a deeper beachhead than before, but this would be possible, as would execution of the latter type missions, through the increased radius of action ashore and the greater speed and power of the mechanized landing force.

Planning could generally follow the amphibious sequence, with no departure from present sound amphibious command relationships, definition of responsibility, and coordinate naval-landing force planning.

The scope and nature of advance intelligence effort need differ from the usual amphibious only in the following particulars. Hydrographic study of the target must include greater emphasis upon beach characteristics affecting the landing and exit of vehicles, offshore and onshore mine fields and obstacles, and upon the precise determination of foreshore and backshore trafficability. The zone of intelligence coverage must be deepened inland and primary intelligence effort focused on the following:

(1) *The hostile antitank defense (and mobile reserves) –including location, nature and strength and*

(2) *Terrain characteristics–particularly trafficability, vehicular cover, and vehicular concealment.*

Normal means of amphibious reconnaissance reoriented to provide the foregoing information should be adequate. Although perhaps not generally so recognized, the present highly refined prior reconnaissance of the landing area is quite as thorough and detailed as in land warfare. The enemy is not alerted, and aerial photographic and sneak reconnaissance are both more practical than under the normal conditions of established land fronts. Aerial photography and other amphibious reconnaissance means have been so highly developed that all details of terrain essential to successful mechanized action can be readily determined, including that detailed information required to plan the maneuver of small units and even of individual vehicles.

U. S. Marine Corps

Men alone lack the punch for breakthrough and exploitation . . .

Based on the intelligence estimate, the landing force commander's estimate and decision would be reached through orthodox evaluation and military reasoning, the time and place of landing being selected to provide the greatest combination of physical facility of landing, minimum hostile interference, and the greatest certainty of accomplishment of the mission in respect to objectives and conditions extant inland.

Maneuver

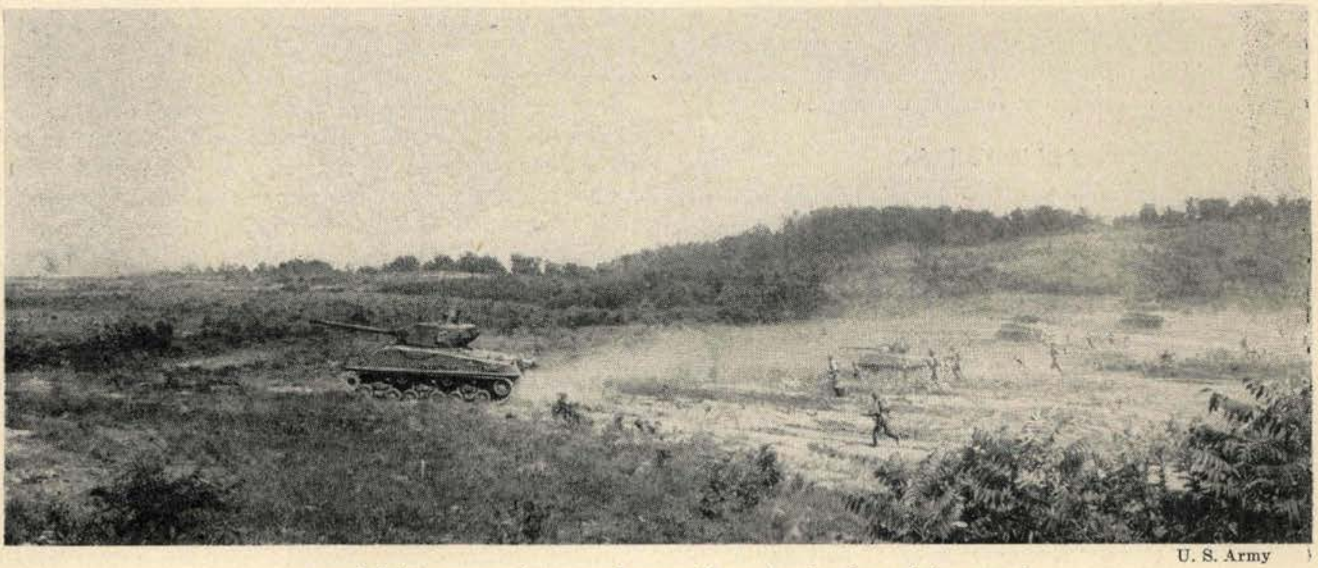
The scheme of maneuver of the mechanized amphibious attack, of course, will always include that critical amphibious phase–the assault of the beach. This will involve a linear assault in the selected landing area or areas. A continuous landing beach is not necessary and the location of inland objectives and the nature and trafficability of beach and terrain inland may dictate several separate landings. However, landings should be in general proximity to each other to provide mutual support; also, so that success and breakthrough inland anywhere will at once outflank and render untenable hostile positions which might be holding up the attack in other landing areas.

As future hostile defense forces become more mobile and the premium on surprise becomes greater, pre-landing naval and aerial bombardment must be much briefer, but far more intense. The primary function of the preparatory bombardment will be to smash the hostile antitank defense in the landing area. Naval gunfire concentrations and air strikes of *great weight* covering hostile routes of armored counterattack must be preplanned to be *executed rapidly* on receipt of target information provided by an *effective antitank warning service*. Powerful direct naval gunfire and air support reliably controlled by vehicle-borne spotter-controllers must be provided all mechanized task forces. This direct support would be employed by the task force to blast hostile strong points encountered, to protect the flanks, to disrupt counterattacks–*and above all, to destroy or neutralize hostile antitank elements as encountered.*

Ship to Shore

The ship-to-shore movement would be greatly accelerated as a result of mechanized passage of the beach and mechanized assault inland. If a ten-knot speed on water and land was achieved, good vehicular dispersion could be obtained by one-minute intervals (300-odd yards distance) between waves. Even with slower speeds and greater interval a powerful force could be landed in the first hour, a far greater force than during the entire first day of past landings. With this sharp speed-up of the attack two alternatives become possible. The assault waves could continue inland beyond initial beach objectives, pushing out reconnaissance and varying formation in accordance with previous plans and the unfolding situation to seize inland (final) objectives, leaving for following waves the task of screening and defense of the landing area. Or, initial assault groups could establish the landing area screen by fanning out inland to seize dominating and protective terrain, with following task forces making the main thrust inland. In either case, both the establishment of the landing area screen and attack inland would be executed almost simultaneously, and the choice of method and sequence would hinge largely on local conditions. If the initial assault group established the landing area screen, tank units and other heavy elements not required for its maintenance could be shifted to task forces driving inland. If later waves established the screen they could be specially composed as required.

Local defense of the landing area would depend much upon the rapid construction of hasty obstacles and mine fields and upon local mobile reserves and aggressive reconnaissance. Local defenses would be backed up by the *entire mechanized landing force,* highly mobile and an effective general reserve. The screen would thus require but light forces capable of giving warning of hostile threats and delaying counterattacks only until proper counterdispositioning of the main landing force could be effected.



U. S. Army

. . . amphibious operations need over-all mechanization of the attack.

The Landing—First Wave Composition

It must be remembered always that seizure of the landing area, important though it is, is not an end in itself but rather is a preliminary and supporting phase to the *decisive seizure of final objectives,* upon which the accomplishment of the mission is dependent.

Unless absolutely certain the landing will not be opposed, the following assault pattern and sequence, adapted to conditions, might be considered normal to seize rapidly and pass initial beach objectives. First, beach defenses must be blasted, especially antitank defenses. *Lanes or zones must be cleared through beach obstacles and mine fields prior to the landing.* This can be accomplished by special bombardment or by line charges projected or placed by amphibious vehicles, landing craft or aircraft. With present incompletely developed methods of employment of explosives to clear mines, mine-clearing vehicles would be required in the assault to insure complete clearance. Maximum initial assault power is achievable *only through a fire wave of medium and heavy tanks.* The formation of this logical first wave should be staggered, not linear, and would reflect the usual adaptation to conditions and the configuration of the coast line. Command tanks would be in their usual over-watching position, slightly behind assault tanks. In the vicinity of command tanks, and likewise in over-watching position, should be the *special tanks for air and naval gunfire support control.* The heavy tanks would engage major hostile weapons, heavy armor and fortifications, with the mediums smashing lighter weapons and laying down area neutralization fires on the final beach approach and providing close-in protection for both the heavies and themselves. Tank dozers and flame and obstacle-clearing tank units should be landed as an integral part of the wave, usually following gun tanks but so located laterally as to be available instantly to complete the job of obstacle clearance and to execute both preplanned missions and other tasks as the need developed.

The Follow-Up

The second wave should consist of mechanized infantry and engineers, the function of this wave being generally support of the first wave. Units within the wave should cover down tank elements of the task force of which a part. Command would cut through waves from front to rear as in the present amphibious task organization. This second wave of infantry and engineers could be light, only strong enough to provide close support of the tanks and to execute special missions. Larger tactical infantry and engineer units would follow the assault later. Tanks could be added to fill out the wave; this landing position would be excellent for additional special armored vehicles and heavy tanks.

As many additional waves as required to insure the penetration and overrunning of the hostile beach defense should be deployed and committed to the initial assault. Their composition would be essentially that of the first two waves, that is a tank wave followed by an infantry-engineer wave. Any desired assault depth could be built up either by narrowing task force frontages or through use of larger task forces.

However, only sufficient strength should be deployed in the assault to insure the positive and rapid overrunning of beach defenses and directly supporting hostile positions without risk of failure or delay. The remainder of the landing force should be landed as balanced tactical units prepared for instant action but deployed only as required for self-protection. These later waves should be constituted and disposed as required to execute planned missions inland, and they would follow or pass through, reinforce or be reinforced by, assault groups as planned to accomplish the drive inland and simultaneously establish the landing area screen. *However, regroupment should be minimum and insofar as practical preplanned.*

Tank flotation devices would be essential for tanks deployed in the assault of the beach. But following tanks could be landed more economically, and quite satisfactorily, directly from landing craft and landing ships. Infantry and engineers in the initial assault should be landed in armored amphibious carriers (today the amphibian tractor). Infantry and engineers of later waves could be landed in either amphibious carriers or conventional armored land carriers (from landing craft and ships).

Artillery's Role

So far, we have not discussed the role of ever-important artillery. Naval gunfire, limited in flexibility and unable to support the attack beyond a certain distance inland, is at present a far better supplement than substitute for artillery. The role of artillery in both amphibious and mechanized operations always has been an important one offensively and defensively, although its offensive amphibious value has been somewhat tempered in the past by its late entry in the action ashore. But as landing force mobility is increased, artillery cannot but gain in importance by virtue of its own great inherent mobility (of fires). Pending development of a *long-needed, truly amphibious artillery* capable of functioning both afloat and ashore, the mechanized landing attack requires the immediate landing of artillery as sufficient ground is uncovered ashore by assault elements to permit minimum range cross-fire employment. Self-propelled artillery should be landed from the first landing craft waves following assault tank-infantry-engineer groups. It is visualized that the landing of direct support artillery could be accomplished normally *between H-plus-5 and H-plus-15 minutes,* depending on the speed of the mechanized assault inland. Artillery forward observers would be vehicle-borne. The employment of artillery (supplemented by naval gunfire) in the action ashore would be in accordance with mechanized doctrine.

The armored amphibian has been eliminated. Despite its splendid performance in Pacific over-reef operations, it is an improvised and essentially inferior weapon for all but special operations involving peculiar offshore obstacles. It has no place in any other amphibious attack, for *normally the floated tank, with greater fire power and much less vulnerability, can perform the armored amphibian primary mission far better,* and tanks and self-propelled artillery can execute all secondary armored amphibian missions ashore more efficiently, in addition to their normal roles. The passing of the armored amphibian will not mark the end of a weapon type but only the obsoletion of an improvised amphibious tank-assault gun model.

The Reserves

Mechanized reserves should follow assault troops closely along the axis of major advance—*primarily lending depth, weight and continuity to the offensive action to seize final objectives,* at the same time constituting ready reserves in guarantee of the inviolability of the landing area.

Behind these reserves should land the follow-up troops —mechanized, motorized or partly motorized to employ shuttle transportation. Heavily equipped with defensive weapons, these troops would push behind the mechanized striking forces, mopping up by-passed resistance and promptly occupying and defending objectives. The landing of follow-up troops normally could begin during the first hour and their fanning out inland would free the landing area screen for other employment.

Upon establishment of coordinated defenses along the final beachhead line by follow-up troops, mechanized assault elements would complete rearmament and revert to mobile reserve. In this powerful reserve backing up static defenses would rest the great strength of the defense. Artillery, aviation, and naval gunfire (range permitting) should be flexibly employed in *dual support* of main line of resistance static positions and the armored reserves.

The complete seizure and consolidation of a beachhead should be possible within the period of perhaps half a day, and certainly a whole day. The enemy would be offered little opportunity to strike the landing force in movement or on unfavorable terrain; the beachhead would be won before night could provide favorable conditions for the enemy to converge his forces in major opposition.

Thus far, we have confined our detailed discussion of the amphibious-mechanized attack to the execution of a conventional amphibious mission in the seizure of a beachhead. This has been intentional, for broader employment of the mechanized landing force against *deeper* objectives such as vital hostile installations would entail the preliminary establishment of the beachhead much as described. Landing force task forces would then strike farther inland beyond the beachhead to execute special missions by limited radius mechanized thrusts, subsequently retiring to the safety of the beachhead as might be necessary.

The passage of large armored (or other type) land units through the landing force to commence operations in exploitation of the beachhead would be facilitated by the nature (mechanized) of the landing force. The landing force could render valuable early assistance, and thereafter guard the beachhead and rear—or if required, landing force elements could be used to reinforce the land forces during early phases of operations inland. In the over-all sense, objectives defining the final beachhead line in such operations would be only *intermediate* objectives, and would be consolidated and defended only to the degree necessary to *protect the rear* and *provide a springboard* for the large-scale thrusts inland. Such subsequent operations properly fall in the category of land warfare and would be governed by land warfare doctrine.

The Supply End

The mechanized amphibious attack is entirely feasible logistically. Shipping of required types exists today in sufficient quantity to land powerful mechanized landing forces. Shipping of *more efficient types* could be constructed on a war basis in much greater quantity. Supply requirements would be heavy *but could be met*. A future beachhead of 25-mile depth probably could be seized without refueling assault vehicles, being well within the fighting radius of modern combat vehicles. With surprise and speed drastically reducing the enemy's capability of reaction, it is likely that most assault units could seize final objectives without rearmament. However, *at least sufficient fuel and ammunition for a single complete servicing and rearmament of all equipment should be embarked mobile-loaded and landed immediately after follow-up troops to provide supplies as required to complete the seizure of the beachhead* and for prompt servicing of combat vehicles to ready them for beachhead defense. In the case of limited exploitation operations by the landing force beyond the beachhead, additional mobile-loaded supplies would be required proportionate to scope and duration. In either case, supplementary supplies should be landed as early and as rapidly as practical to build up supply reserves.

Maintenance elements should be landed in normal strength and position in relation to combat vehicle components in accordance with mechanized doctrine; retrievers should be included in assault formations. And any undue limitation of maintenance equipment would but prove *false economy* in the long run.

The mechanized landing attack is most sound from the over-all naval viewpoint. The entire landing force and its mobile-loaded supplies could be landed in a fraction of the time hitherto required, sharply reducing the period of concentration and immobility of naval vessels incidental to landing the landing force. *Control* of the accelerated ship-to-shore movements would be *simplified*. Instead of landing only light elements in the assault and selectively ordering ashore artillery and heavy units (intermingled with supplies and infantry reserves) as space became available during the "inching" progress of the past infantry amphibious assault—balanced forces would be landed initially; there would be no halts to disembark or dismount at the beachline, no bogging of the ship-to-shore movement.

The dispatching and control of landing waves would be facilitated, with speed and interval between waves simply adjusted on preceding waves. Although the landing formation and order of landing serials could be varied from plan, it is not visualized that this would be required normally. The commitment of later units to action would be simplified; more rapid—for they would be already ashore, immediately available and dispersed, probably far safer than afloat. The quite ponderous system of ordering so-called "on call" waves ashore after the "need has arisen ashore," used in the past to commit reserves and supporting troops would be largely eliminated. Finally, control of armored troops is inherently easier than control of dismounted troops due to better observation and markedly superior communications enjoyed by mounted commanders, and because vehicles are far easier than men to observe and control in battle.

Modifications of Matériel

Whereas the mechanized amphibious attack is in fact practical today and we have for the main confined our discussion to current equipment, certain matériel improvements are clearly needed. Improved tank flotation devices are desirable to give greater water-borne tank speed and maneuverability. A completely new armored amphibious carrier of greater speed on water, vastly improved performance on land, and with all-around splinterproof armor —to replace the amphibian tractor and most if not all wheeled vehicles of combat units—is next in importance. A heavy tank superior to any tank in the world and improved mine-clearing equipment are other items very badly needed but seemingly capable of attainment. In the naval field, adaptation of amphibious shipping to better transport and land equipment (rather than men) is a must. The large, vulnerable and inefficient AP and AK of small payload must be replaced by greater numbers of smaller landing ships tailor-made to accommodate and launch flotation-device equipped tanks and to land combat and supply vehicles directly on the beach rapidly in great numbers. The tempo of disembarkation must be stepped up. Antiquated boom-sling methods of cargo handling and disembarkation of personnel by cargo net should be replaced by faster, more efficient methods. *A system of bulk fuel delivery ashore* would be of particular value in supporting the mechanized landing attack.

The Pitfalls

Although the fully mechanized landing force is entirely within our capability of attainment, we must avoid three principal pitfalls. First, *total mechanization is essential*, for any dismounted element slows the entire force, any unarmored element exposed to destruction or neutralization jeopardizes the balance and effectiveness of the whole force. Second, there is the *danger of compromise or hedging;* a weak, faltering mechanized attack can only result in certain and costly failure—doubts must be resolved in the decision whether or not to employ the mechanized attack, and fully adequate forces must be supported without stint; and the mechanized attack must be boldly and determinedly executed. Finally, although mechanized tactics and techniques of combat are clearly defined, they are *complex in detail* and require the comprehensive training of all ranks of all arms to achieve the coordinated, near-automatic teamwork at troops level. To give good troops good equipment will not be enough; mastery of vehicular combat including precision fire and maneuver—long established requisites of successful mechanized action—can be achieved only through *thorough and detailed individual and unit training* with full equipment in conjunction with all other partners of the armored team.

Conclusion

The mechanized amphibious attack and the airborne attack are naturally complementary. The amphibious attack, of lesser strategic mobility than the airborne attack, has one major compensating advantage—the capability to land a combined arms force including all heavy components to do battle with and defeat balanced hostile ground units. This capability to land critical heavy weapons must be fully developed and exploited if the amphibious attack is to retain its primary usefulness—for the airborne attack will be able to execute far better the light and heavy infantry missions of tomorrow. Airborne enthusiasts can but dream of the future potentialities of the airborne-mechanized attack. But the fully mechanized landing force is today a practical amphibious capability.

THE LAST CHARGE!

by M. K. DZIEWANOWSKI

CARDED

[Editor's Note: *Ten years ago this month the German Invasion of Poland took place, inaugurating the Blitz type of warfare by armor. That invasion seems to mark a definite phase in the evolution of ground warfare. The Polish Campaign was the forerunner of things to come. Our own country as well as Poland and many others, all were far behind the Germans when they launched their armored spearheads. Perhaps the action described in this article marks the critical moment, bowing out the old and ushering in the new. This article is offered with that thought in mind, and with the further thought that the horse still figures importantly in the armies of many nations of the world—whether by choice or necessity—and will continue to appear on the field of battle for some years to come.*]

". . . The trumpet, the gallop, the
charge, and the might of the fight.
Thousands of horsemen had gather'd
there on the height,
With a wing push'd out to the left
and a wing to the right
And who shall escape if they close?
. . ."

"The Charge of the Heavy
Brigade at Balaclava."
October 25, 1854—
Alfred Lord Tennyson.

THE account I am going to give you is of a cavalry charge in which I took part in September, 1939, as platoon commander in a cavalry regiment. It may well be that this attack will rank in the history of warfare as the last great charge of cavalry. Bear in mind that it was a whole brigade that obeyed the order: "Gallop, march!" My place was on the extreme left, so that I was able to see the whole of the regiment wheel around to the gallop—a grand spectacle!

It is a fragment of the fight the Polish Armed Forces put up defending their country against the German invasion of 1939. The Suwalki Cavalry Brigade, composed of three cavalry regiments, one artillery regiment and a group of light armored cars, had been fighting night and day on the right flank of the Narew Army Group, whose task it was to stop the left flank of General von Kuechler's army marching on Warsaw from East Prussia. The group was pushed back by the sheer weight of German fire power and armor. The brigade, being more mobile and having suffered less from fighting the head-on rush of the enemy, had relatively small losses during the first days of the hostilities. Early on September 7, it stood almost forty miles from the border of East Prussia. It was fighting a defensive battle against a light German army group reinforced by squadrons of a cavalry division; this division was the only great cavalry unit the Germans possessed at that time.

The advantage of numerical superiority was definitely with the Germans. All we could throw in against their hundred tanks was about twenty light armored scout cars. In fire power the Germans had a superiority of about 9 to 1.

It seemed therefore that the Germans, because of their superiority in fire power and armor, would cut through the live mass of Polish cavalry like a knife through a loaf of bread.

And yet, in spite of this unequal struggle, during the first week a dozen of our brigade's small anti-tank guns destroyed 31 enemy armored vehicles and we took over 200 prisoners. Each day our technique of fighting the enemy hiding behind armor improved, a technique of pursuit, of ambush and ruses. A machine that looked formidable at a distance began to show, especially at night, its impotence against daredevils who had the nerve to approach the tanks and throw gasoline-filled bottles. Others crept up to wreck the caterpillar treads of these tanks with bunches of hand grenades.

From a proud cavalry brigade we had turned, within a week of war, into an outfit of tank hunters. By night we lost ourselves in woods and marched over trackless ground to harass the enemy's armored columns at rest stops or on the march, jumping him unexpectedly, raiding his lines of supply and communications.

The news grew steadily worse. On the evening of September 8, we heard that the Germans were closing in on Warsaw. We resolved, however, to do our duty, come what might. Most of the time we were hungry, and for a week we had not more than about three hours' sleep a night. Our poor horses could not be unsaddled for days on end. With fodder growing scarce, they were becoming dispirited and vicious.

We were fully aware of the fact that we had to adapt ourselves to new methods of warfare. After all, we had to make the best of conditions imposed on us by war, not of our seeking. One desire, however, was uppermost in our minds, and we discussed it in our short talks at officers' roll-calls. Should modern warfare depose the cavalry, then we would make a dignified exit after just one more charge at the enemy in the glorious tradition of our cavalry.

"If we only could get at them and have it out, man to man," was the constant theme of our talks.

On September 9, we received the following order: "To relieve German pressure on Warsaw and to give the capital time to organize its defenses, the Suwalki brigade will make a raid on the enemy's rear, blow up the bridge over the Narew River near Zawadow, and tear up the railway track between the station Rogowek and Chwalewo."

At the officers' roll-call the brigade commander, General Podhorski, told us: "Gentlemen, to carry out our assignment we must march all night

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Polish Photo

A fragment of The Last Charge!

over the field-paths and avoid main highways. The engineering squadron will proceed with the wrecking jobs as ordered, while the rest of the brigade will act as a covering screen. Once the assignment is executed, we shall head for the Bialowieza Forest."

Dead tired though we were, the news was received with joy by officers and men alike. We felt that at last we would have the chance for action as a large body of cavalry in a task for which we had been trained, prepared and were eager. On that very day we made four ambushes against tanks and fought two skirmishes. We had little more than two hours' sleep. Some of the squadrons had not even that much, but thought of the raid gave all new energy. At last our chance had come.

We moved off at 7 P.M. Regiment after regiment, squadron after squadron marched past at a trot before the commander as he reviewed his decimated but still hardy brigade.

It was a gruelling all-night march over broken ground, through thickets and over rugged terrain. We were secured by a dense screen of patrols, but we avoided human settlements, cut across roads, and stuck to the forests and untravelled ground.

An early September dawn, misty and chilly, found the brigade at the northern edge of the large Zambrow forest, about ten miles from the bridge we had to blow up.

It was almost 6 A.M. when the patrols reported to the brigade commander that a battalion of enemy infantry was marching along the highway between Rogowek and Chwalewo. Our sentries did not see any patrols, but reported that a column of tanks and transport trucks was moving parallel with the infantry.

The brigade commander was hard put for a decision. The conditions for a surprise attack were ideal. We were hidden in the woods about a mile and a half from the enemy. It was now or never. On the other hand, the risk was great. An attack by the entire brigade was bound to betray our purpose.

At last our commander decided to strike. He stopped his brigade and reversed the direction of our march. We crossed the strip of woods separating us from the enemy. Our regiments assembled at the edge of the woods. Between us and the enemy on the highway ran a strip of rubble field over a mile long. Close by the highway was a stretch of dry meadowland.

Since we stood on higher ground, we saw plainly what went by on the highway. A serpent of troops more than two miles long wound its way lazily through a cloud of dust, while the motor transport swiftly flowed by the slowly marching infantry.

Our commands came fast: "The First Ulan Regiment and the Third Light Horse Regiment will charge. The Second Ulan Regiment will form the reserve. The brigade's heavy machine-gun squadrons will support the charge with their fire. The anti-tank squadron will screen the brigade from the west against a possible tank attack. The engineering squadron will take advantage of the charge to reach the bridge and the railroad track."

The squadrons then pushed ahead

(Continued on page 31)

Polish Photo

A patrol of the Suwalki Brigade crossing the Narew River.

"A good plan violently executed now is better than a perfect plan executed next week."

General George S. Patton
in *War As I Knew It.*

Practical Training Management

by LIEUTENANT COLONEL ANTHONY F. KLEITZ

TRAINING Management was designed to give the officer student practical instruction in training his platoon to attack with violence—*now!* Most students had had years of planning in the classroom. Now, to make his training more effective, the student was to prepare and then execute his own plan. The field replaced the classroom for the students of Officers Basic Class No. 1 at The Armored School.

The following concept was accepted as the basis for Training Management. First, the problem was to be given to the student. He was to solve the problem. The instructor would check over all solutions, and one or more workable solutions would be chosen. The students who had submitted the accepted solutions would be the various commanders for the execution of the problem. Students, properly briefed, would control the problem, act as safety officers, and critique the execution. Needless to say this concept was varied to fit the particular problem.

The Instructor End

In presenting his subject, the instructor first outlined the problem; then he observed the execution, gave advice as asked for, stepped into the action only as a last resort, and finally participated in the critique. As far as possible he was to be the same instructor who presented the subject in the classroom. In all, fourteen different instructors participated in Training Management.

Actually this was a dry run for the rapidly approaching day when the company commander might say, "Lieutenant, next Monday we want to have some platoon attack problems. Work up some good ones. Tomorrow morning let me see what you plan to do." Or it could be, "Lieutenant, we are going on the range next week. You take charge of the tank gunnery firing."

Actually, nothing new was taught in Training Management. It was the practical application in the field of the lessons taught in the classroom.

Cedar Creek Base Camp was set up as a semipermanent tent camp. It was to be a base of operations from which the tank company would work.

Organization

Prior to the actual starting date, four students had been designated as the crew of each tank. Within each crew the students rotated from one job to the next each day. There being approximately sixty students, three platoons of five tanks each were formed. From this organization daily command assignments were made.

Training Management commenced with a brief orientation of the entire problem: then off to the motor park where the students drew the equipment to stow in their tanks. One must actually handle this equipment to realize the tremendous number of items necessary to equip a modern tank.

As soon as this stowage was completed a brief review of radio procedure refreshed everyone on the basic method of control. Everything was set for the road march to camp.

The problem of the march to camp had been given to the students in class several weeks before by Lieutenant Colonel M. G. Roseborough. The route of march and the time of departure had been designated. It was as if a battalion commander had given an order to one of his tank companies to make a march by itself. The students completed their solutions and turned them in. A completed march order and march table were selected. The student who had submitted this order was to command the company during the march to camp. Now the company was all ready except for the actual issuing of the order.

March Order

The student commanding the company, Lieutenant W. C. Buckner, gave his instructions to the guides. Then he gave his march order to the company, and right on time, the tanks started leaving the motor park. Lieutenant G. R. McSpaden, Lieutenant T. Y. Awalt, and Lieutenant W. G. Thomas commanded the platoons. The students soon realized how exact the control must be to keep tanks closed up during a road march. Rolling fifteen tanks down a road was a new experience. Although tank commanders and drivers were inexperienced, the column rolled into the motor park in good order.

The afternoon was spent in formation driving. Rough terrain added to the worries of the tank driver in keeping his tank where it belonged.

Maintenance that first afternoon was slow and not so sure. Many questions arose for Captain A. J. Yoho to answer. Why change the oil in the oil filter so often? Why grease the suspension system again?

The next morning the county fair method was adopted for problems in the platoon in attack. Three different platoon attack problems were set up. Aggressor enemy was actively present in each problem. The instructor, Captain C. A. Wilburn, coordi-

The transition from academic classroom study to practical field application is a welcome one to all students. To lift a problem from the blackboard and slap it down on terrain, especially in armored operations, is a most re-

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nated all three attacks. His main problem was to insure that the platoons would not overrun each other on the way from one attack to the next.

Student Control

Students controlled the individual problems. Lieutenant J. B. Hughes controlled the enemy and gave the critique for the first attack, Lieutenant W. A. Byers for the second, and Lieutenant D. F. Packard for the third. Previously the control students had been briefed on their particular duties and what was to be expected of them.

Due to the administrative limitations it was necessary to hold the command inspection that afternoon. The company commander, Lieutenant T. W. Bowen, had been given an order by Lieutenant Colonel A. F. Irzyk, that the battalion commander would inspect the company at 1530 that afternoon. From there on it was up to the company commander. It was necessary for him to choose the location for the inspection and the formation. The company was moved there and lined up. Command inspection in a tank unit requires a lot of work on everyone's part. A readable and complete chart must be available to govern the layout of equipment. Much more time is required than there is in an afternoon for the proper preparation of such an inspection.

After the inspection, the company commander and the platoon leaders for the night march were given preliminary instructions. The company commander, Lieutenant M. Taylor, developed the plan for the march and had his executive, Lieutenant W. W. Plummer, arrange for the resupply at the assembly area. The march included going into and coming out of a company assembly area in a blackout.

Learning Lessons

By the time the march was completed, two facts were obvious. First, a tank company should attempt to move on if its hourly halt places it on a bad piece of terrain. If at all possible the company should halt on terrain level enough and open enough to facilitate the necessary checking of the tanks. Second, it is difficult to pick an assembly area from a map. Someone should be sent ahead to reconnoiter the area. If this location is not suitable, he must find one that is acceptable and locate the platoon areas.

The platoon problems the next day once again emphasized the need for effective control. Since the enemy was Aggressor troops rather than flags or targets, it was often rather difficult to determine the exact enemy location in order to attack him.

munerative application. Here is the story of practical instruction at The Armored School, with officer students learning the key requirements of the platoon in the attack—*with violence . . . now!*

The following three days continued the development of platoon and company problems; Major B. O. Norman and Major H. C. Bone were the instructors. Live or blank ammunition were fired in each problem. Aggressor was there to stop the blanks, while various types of targets were fired at to show the effectiveness of tank fire with ball ammunition.

Concrete Improvement

Even though company and platoon commanders changed often, real progress was made. Plans improved. No more were flank tanks deployed into the trees and out of the problem. Room for maneuver was always considered. Orders became sharp and clear and brief. One company commander who started the day with the indecision of a novice by midafternoon had the company completely under control and effectively executing a company attack. Many of these problems were written and developed by the students. This added interest as well as varied the solutions to the different problems. On occasion, where control weakened before the problem was completed, the commander was required to run the same problem again. Every opportunity was taken for the commander to command.

Then came the day for the preparation for the night attack. Late in the afternoon when the company came in for maintenance, the company and platoon commanders for the night attack were assembled. Lieutenant Colonel R. M. Parker, the instructor, took them out to an observation post on Dorretts Run Range.

There he explained the problem. The company commander, Lieutenant E. C. Whitehead, developed his plan and discussed it with his platoon leaders, Lieutenant D. A. Starry, Lieutenant P. H. Ronzone (USMC), and Lieutenant W. E. Byers. Then he gave a preliminary order and reconnaissance instructions. Lieutenant F. E. Tibbetts was kept busy as company executive officer. An armored infantry company (Company A of the 526th Armored Infantry Battalion) was already holding the line and would be available as supporting infantry in the attack. Orders

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Loading up . . . . .

became bolder and bolder as the evening wore on. More and more advantage was taken of the terrain, the darkness, and the moonlight; searchlights were ordered on a stand-by basis. Tanks were led into position by the tank commanders on foot. The artillery preparation, as requested, was brief but heavy. The attack jumped off right on time and in a decisive manner. The supporting infantry followed closely.

As dawn broke, the coordinated attack drove up the hill, and soon the objective was overrun and outposted. The addition of armored infantry vastly increased the realism of the attack.

After the critique, the chow line formed for breakfast.

Combat Firing Problem

All morning was allowed for the students to write a combat firing problem with the tank company in the attack. A large area was given for the problem. An overlay with the safety limits was given to each student. The limits were also marked on the ground by red flags. During the morning, the students reconnoitered and wrote their problems. Over the lunch hour, the instructor chose one which was suitable, considering the terrain and the safety requirements.

After lunch the tank company was organized with Lieutenant J. B. Hall, the author of the problem, in command. His platoon leaders were Lieutenant J. B. Hughes, Lieutenant F. E. Tibbetts, and Lieutenant R. A. Whitfield. Lieutenant R. G. Dekle (USMC) was chief umpire, and he had two assistants, Lieutenant K. I. Pressman and Lieutenant E. S. Bierer. The administrative details were taken care of and the problem began.

Control and More Control

Control, control, control—that was the big problem! Fifteen iron monsters charging down the road or maneuvering cross-country are more than a handful. The problem was repeated to impress on everyone how complete and detailed the control must be to get the results you want when you want them.

The preceding day's problems, the preparation for and the execution of a night attack, and the company combat firing problems, had followed each other with no appreciable break. Manning tanks in action is hard work. Commanders always have the men rest while the planning takes place. Since all of the students were in on most of the planning, very little rest was had, and it was a very tired company that returned to base camp late that afternoon.

The next two days were spent on tank gunnery. Several days previous to this instruction, the preliminary planning had commenced. The two days were broken down into four half days of training. During this period all phases of the tank gunnery course were to be fired. Due to the nature of the problem and the time allowed, it was impossible for each student to fire the entire course. Hence, the course was not fired for qualification.

Dorretts Run Range and Cedar Creek Range were available. A student officer in charge, with his necessary assistants, was chosen for each half day of training on the range. Using available printed instructions, drawing on previous instruction, and asking the gunnery instructor, Major R. M. Click, pertinent questions, the student officer in charge requisitioned the necessary ammunition and range

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. . . . . to fire

supplies. He then organized his range and planned the firing. His next job was to actually run the range with the aid of his assistants.

It was hoped that this practical exercise would prove of value to the students, most of whom would be arriving in the ETO just in time for the range season.

Back to Hq

On the second day as each group completed its firing, that group cleaned up its range and then marched back to Fort Knox. It was a tank company marching in two serials. This march also had been planned by the student commanders concerned.

On entering the post, each group of tankers stopped to wash off their tanks with pressure hoses. In each group this went peacefully for about ten minutes—then one of the officers got a jet of water right in the middle of his back. That was the start. Very few completely dry lieutenants arrived home that evening.

Then came the final day of maintenance. This was to be accomplished according to specified requirements. Then the tanks were checked back to Company A of the 70th Tank Battalion.

Critique

The following morning a two-hour critique was held. Each instructor was allowed five minutes to review the high points of his instruction. Major Norman was so enthusiastic that he spent an additional five minutes, later in the day, finishing his critique to the new lieutenants.

Now that it was all over, what were the benefits to the students? For the only time in their careers these officers were subjected to the numerous details connected with caring for a tank. They now appreciate the control necessary to properly maneuver a tank company into action. After years of classroom orders, it is now clear to them that orders must be sharp and clear, and given well in advance of the time they are to be executed. Planning, thinking the problem all the way through, is the key to success. And as for maintenance, these sixty lieutenants will never forget it. There is a tremendous amount of maintenance in a tank company.

Approval

Was it worth it? The students invariably agreed that they not only enjoyed it more but also learned far more in the field than in any comparable period in the classroom.

The Last Charge!

(Continued from page 27)

to the edge of the forest. The engineering squadron fell out to proceed to the bridge. It marched off at a brisk trot. "Good luck. . . ."

The squadrons stretched out in attack formation on the open field beyond the forest. The command "trot march" rang out. The enemy had not yet seen us. The rising sun promised a clear day. There was a perfect stillness in the air.

The picture of the regiments emerging from the woods was so enchanting that it seemed unreal. It was a perfect model for a battle painter.

We proceeded at a slow trot. The Germans marched on unconcerned. Then suddenly our heavy machine-guns, hidden in the woods, gave tongue with a well-timed salvo straight into the column of marching Germans. The battle was on!

The command, "Draw sabres. Gallop, march!" flew down the line of squadrons. Reins were gripped tighter, the riders bent forward in the saddles and forward they rushed like a whirlwind.

Meanwhile the highway became a scene of wild confusion. The German infantry slowed their pace and then stopped altogether. We, however, continued our charge at a full gallop. The first German shots went over our heads. We were then about 1,500 feet from the highway and saw that under fire of our heavy machine-guns the Germans were becoming a frantic mob. Some German tanks stopped, while others tried to ram their way through the confusion. Some of the German soldiers attempted to make a stand in the ditch by the roadside, others sought cover behind the transport wagons. Gradually the enemy fire from machine-guns began to score hits in our ranks. The van of the German column, which had been nearing Rogowek, especially seemed to have mastered its confusion and panic, and its fire began to tell. We were then so close that we could see silhouettes of men in the cloud of dust. But we, too, were beginning to suffer casualties. Men and horses fell dead or wounded. Suddenly our machine-guns ceased firing to avoid hitting us. Within a few seconds we reached the highway, using sabres and lances fiercely. The German infantrymen pushed off our sabre blows with their rifle-butts or by simply covering their heads with their arms. Our lances, however, reached even those who tried to hide between the wagons.

The wave of our charge crossed the highway and pursued those who vainly sought flight. Stray shots from the thickets kept falling into the mob on the highway, killing the Germans as well as us.

A squadron of the Second Ulan Regiment, which so far had formed our reserve, was dispatched in pursuit of the fleeing enemy. The battle on the highway died down slowly. The Germans began to surrender in large groups.

We were all out of breath, dog-tired, but elated by the battle, of which we had been dreaming ever since the first day of the war. What we rejoiced over most was that our victory was without great loss of life. The panic-stricken Germans were decidedly poor marksmen. The horses fared worst. We had a score or so of wounded, but only three men killed.

Our bugler blew assembly. We came up slowly, driving our prisoners ahead of us. We took about 200, almost insane from fright. The villages of Rogowek and Chwalewo were aflame, belching dense clouds of smoke, which slowly rose to the sky. In withdrawing, the Germans did not miss the chance to set the torch to two innocent villages.

Then, suddenly, as if by command, the sound of two explosions, and a few seconds later another two, came from the north. That was the signal that our engineers had blown up the bridge over the Narew and Zawadow and the railway track between Rogowek and Zambrow.

ORGANIZATION FOR NATIONAL SECURITY

[EDITOR'S NOTE: The graphic chart presented on this page gives the details on the Organization for National Security. This inaugurates a series of briefs to appear in subsequent issues on the missions, duties and key memberships, with photos, of the respective components of the organization. To this will be added briefs on other important groups such as the Armed Services and Military Affairs Committees of Congress.]

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Photos from

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ARMED FORCES POLICY COUNCIL
Advises Secretary of Defense on Armed forces policy matters

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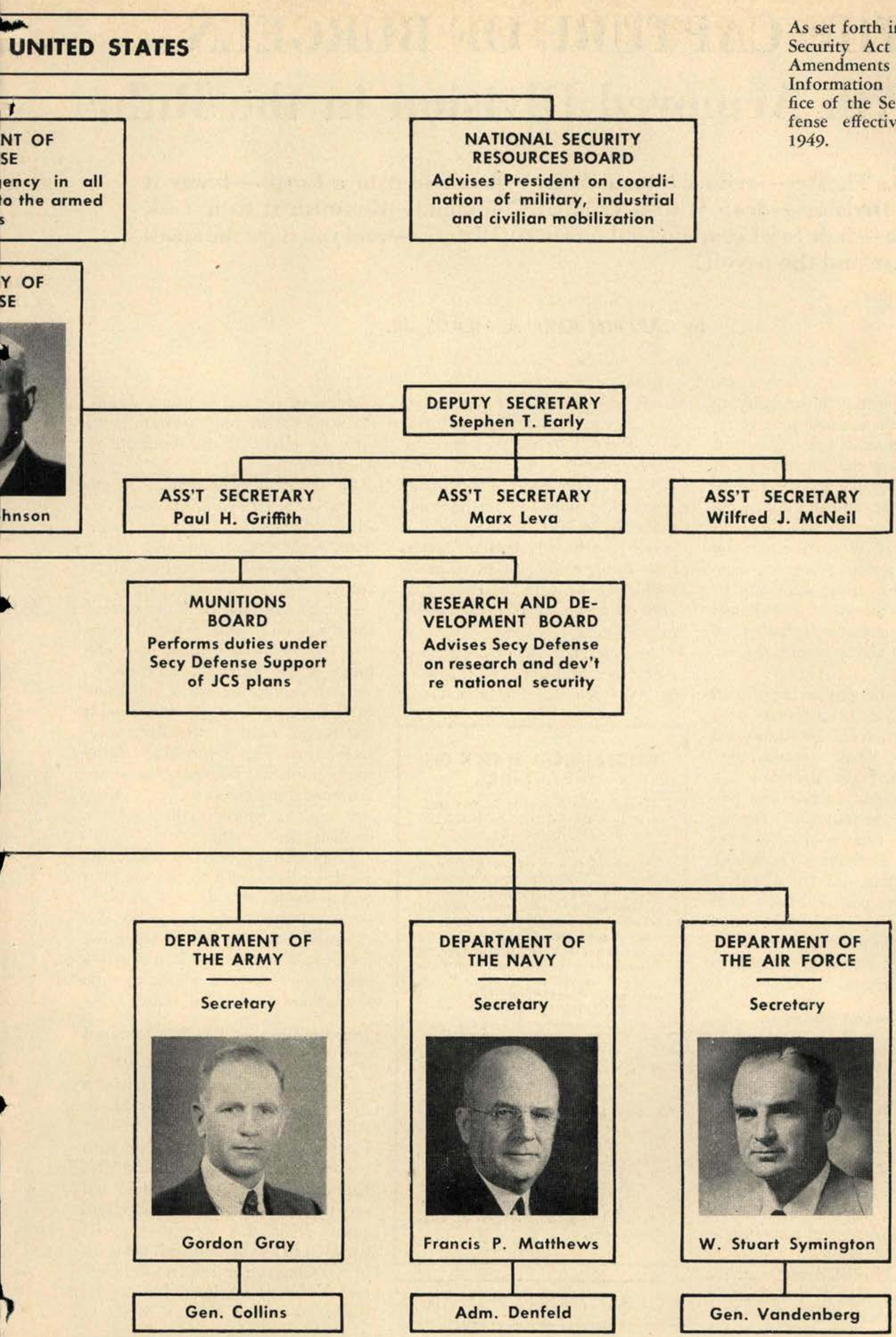
General Vandenberg

As set forth in the National Security Act of 1947 and Amendments thereto.
Information from the office of the Secretary of Defense effective 10 August 1949.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THE CAPTURE OF BURGELN

The 7th Armored Division in the Ruhr

Take a Theater—reduce it to an Army—decrease it to a Corps—lower it to a Division—drop it to a Combat Command—diminish it to a Task Force—fade to a Company and down to a Platoon—and you have the small picture and the payoff!

by CAPTAIN JOHN A. MEADS, JR.

BEFORE putting the magnifying glass upon a small unit in its fight to take a small town, it is well to take a look at the larger view. In this instance the big picture encompasses the Ruhr, and the Allied decision of January 1945 that the main effort would be directed across the Rhine at its northern portion, complemented by a strong secondary attack farther to the south, to be joined in Germany in the encirclement of the enemy's highly important industrial area.

This area is roughly rectangular in shape, extending from Essen south along the east bank of the Rhine, and east from the Rhine some seventy-five miles. The Ruhr River runs east and west through the northern portion of the industrial zone. Among the important centers in the section are Essen, Bochum, Dortmund, Hagen, Duisberg and Dusseldorf.

By the latter part of March 1945 the Allies had closed the Rhine and had two bridgeheads on the east bank. The stage was set for the execution of the encirclement.

The General Situation

For the defense of the Ruhr, the Allies had identified the Fifth and Fifteenth Panzer Armies and the First Parachute Army. These units were commanded by Field Marshal Kesselring. For days prior to the actual crossing of the Rhine, Allied air power had worked over enemy troop concentrations, supply installations, road nets, transport and communications.

The Second British Army launched a successful crossing of the Rhine in the north at three different sites on March 23, but its armor was unable to break out onto the plains north of the Ruhr as soon as had been anticipated, and was delayed until March 27. The Ninth U. S. Army crossed the Rhine on the morning of March 24 and headed due east through the heavily built-up sectors of the Ruhr, with the view toward a possible link-up with the First U. S. Army operating out of the Remagen bridgehead.

The First U. S. Army broke out of its Remagen bridgehead on the morning of March 24 and, in a classic example of the use of armor during the exploitation and pursuit, raced for sixty miles east and southeast by March 28.

BIOGRAPHICAL SKETCH ON THE AUTHOR

Captain John A. Meads, Jr. was graduated from the Baltimore Polytechnic Institute in 1935. He was integrated into the Regular Army in July 1946.

He served as a rifle platoon leader in Company "C" 38th Armored Infantry Battalion, 7th Armored Division throughout the Northern France Campaign and the Ardennes Campaign at which time he assumed command of his company. He served in the latter capacity during the Rhineland and Central European Campaigns to the end of the war in Europe and was awarded a battlefield promotion to Captain, AUS on 14 April 1945.

In the Philippine Islands on 1 September 1946, he assumed command of Company "H" 57th Infantry Regiment in the Philippine Scouts.

He graduated from OCS, as a 2d Lieutenant in Infantry, 29 August 1942; completed the three months Advanced Course at the Infantry School in February 1944 and graduated from the nine-month Advanced Course at the Infantry School in June 1949.

At present he is assigned to the 2502d, ASU, Pennsylvania National Guard Instructor Detachment, Indiantown Gap, Pennsylvania.

COMBAT NARRATIVE FEATURE

On the night of March 23-24, the Third U. S. Army crossed the river, advanced rapidly, captured Dormstadt, and headed northeast for a future juncture with the First U. S. Army.

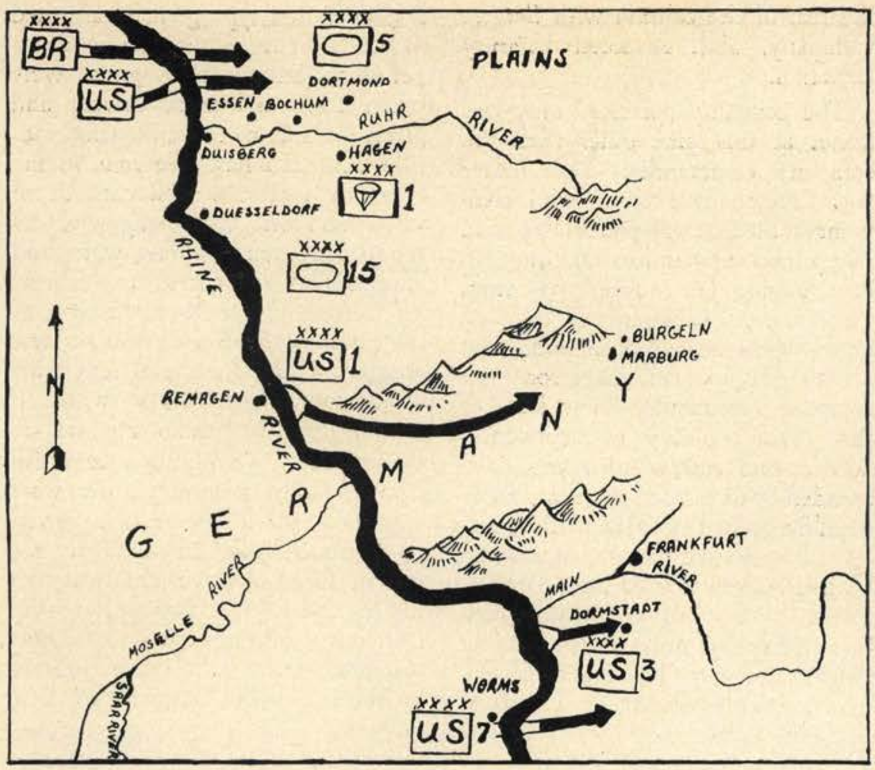
The Seventh U. S. Army crossed the Rhine on March 26 near Worms and shortly made contact with elements of the Third U. S. Army.

With five armies across the Rhine in strength, March 28 ended with the encirclement of the Ruhr well under way. The Ninth U. S. Army in the north was becoming the northern pincer and the First U. S. Army the southern pincer in this gigantic double envelopment.

From that picture we reduce the attention downward to the southern arm of the pincers, to the First U. S. Army, to the III Corps, to the 7th Armored Division, where we pause for a moment to take a look at a subsidiary view prior to advancing onto the ground of detailed action.

The Situation of the 7th Armored Division

The 7th U. S. Armored Division assigned to III Corps, First U. S. Army, and commanded by Major General Robert Hasbrouck, had been committed through the 9th and 99th Infantry Divisions on March 26 and raced out of Remagen bridgehead eastward. It was spearheading III Corps in this operation with elements of VII Corps on its left (north) flank and V Corps on its right (south) flank.



The Ruhr Area.

The 7th Armored Division, with all three combat commands committed, utilized secondary roads to advance by task forces of tanks and armored infantry. Utilizing this procedure, it traversed very rugged terrain but was able to retain the impetus and momentum of its advance through by-passing enemy minefields, strong points, and road blocks organized along the Frankfort autobahn and other primary avenues of approach. Directions were changed often and by operating in numerous small parallel columns the enemy was kept completely off balance and unable to keep our armor bottled up or stopped. It was during this drive that the division encountered a new twist in the enemy's employment of weapons—antiaircraft guns fired against our infantry.

By March 28, the 7th Armored Division had reached and cleared the town of Kappel and was halted on orders from Corps calling for a change to the north in direction of advance, to begin on March 29.

The division's objective in the drive north to begin March 29 was Ederstau See and its controlling dam. The division plan called for Combat Command R and Combat Command B to start out on the afternoon of March 29 for this objective, utilizing task forces operating over parallel routes.

Combat Command R under Colonel Francis P. Tompkins was divided into three task forces for this operation: Task Force Beatty, Task Force Brown and Task Force Griffin, each named for its commander and composed of varying ratios of tanks and armored infantry.

Reducing our attention still further we come to the operations of Task Force Griffin, the area around Kappel and the area immediately to its north.

The Situation of Task Force Griffin

Task Force Griffin was commanded by Lieutenant Colonel Marcus S. Griffin, commanding officer of the 38th Armored Infantry Battalion, and consisted of the following units:

38th Armored Infantry Battalion (less Companies A and B)
Company A, 40th (Medium) Tank Battalion
One Platoon, (light tanks), Company D, 40th Tank Battalion
One Platoon, 814th Tank Destroyer Battalion (SP)
One Squad, Company B, 33d Armored Engineer Battalion
200th Field Artillery Battalion (SP), (105mm artillery outfit attached from Corps)
One Tactical Air Control Party (from 9th Tactical Air Force).

The task force had been assigned a route of advance to begin the afternoon of March 29 from Kappel, skirting the southeast portion of Marburg, presently occupied by the 3d U. S. Armored Division; then east along a secondary road to Bauerbach, north along another secondary road to Ginseldorf, then passing through Burgeln and continuing north to Reddehausen. At that point, new routes of advance would be assigned to Combat Command R. Task Forces Beatty and Brown were to operate on the right flank of Griffin on routes passing through the town of Kirchain. The mission of all task forces was to clear out all towns and enemy resistance along their routes of advance.

Enemy resistance encountered in the past had been sporadic. The principal type encountered thus far had been road blocks and mine fields.

Most of the elements of Task Force Griffin had operated together on previous occasions, which greatly facilitated plans and matters of coordination.

The order of march of the task force for this operation was to be a single column on the road, consisting of a platoon of tanks from Company A, 40th Tank Battalion, mounting a platoon of armored infantry from Company C, 38th Armored Infantry Battalion; the squad of armored engineers; the task force commander and the tactical air support party; the remainder of Company A, 40th Tank Battalion, mounting the remainder of infantry from Company C; the platoon of tank destroyers; Headquarters Company, 38th Armored Infantry Battalion and the Medical Detachment; Service Company, 38th Armored Infantry Battalion; and the attached self-propelled artillery battalion.

The plan of the task force commander was very simple. It called for dispatching a platoon of light tanks from Company D and the assault gun platoon from Headquarters Company as a reconnaissance force to precede the task force over the route previously designated. This reconnaissance force was to have one of the assault guns equipped with a loudspeaker and carry with it an interpreter from Headquarters Company. This force was to proceed to the first town, call the burgomeister through the loudspeaker and demand the surrender of the town. A refusal would mean subjecting of the town to artillery and tank fire upon the arrival of the task force which was following by approximately fifteen minutes. Should the burgomeister accede, he would be carried by the force to the next town to demand its surrender. The procedure was to be repeated until a town was reached which refused to surrender and would necessitate the commitment of the task force.

The Situation of Company C, 38th Armored Infantry Battalion

It will be remembered that Company C was part of Task Force Griffin. In order to follow properly the events which transpired, a brief description of the organization of the company is necessary.

The company was organized along the same lines as all other armored infantry companies and consisted of a company headquarters, which included administrative, mess and maintenance personnel, three identical rifle platoons and an antitank platoon. Each rifle platoon was comprised of a platoon headquarters, one headquarters squad, two rifle squads, a light machine gun squad (actually two light machine gun crews), and a 60mm mortar squad. The antitank platoon consisted of a platoon headquarters and three 57mm antitank gun squads. The company possessed twenty half-tracks, each mounting caliber .30 or caliber .50 machine guns; one 2½-ton kitchen truck and three ¼-ton trucks with ¼-ton trailers. Communication while mounted was provided by SCR-503 and 510 radios while the company commander and each platoon was equipped with an SCR-300 for dismounted action.

The company commander designated the first rifle platoon to ride the leading platoon of tanks, exclusive of the first two tanks in the column. They were to be followed by the second platoon riding the second platoon of tanks and the third platoon riding the last platoon of tanks. The company commander and his command group rode on the tank company commander's tank for purposes of liaison and coordination. The remainder of the company headquarters, the antitank platoon and the company's vehicles were to follow in the rear of the column with Service Company, 38th Armored Infantry Battalion.

The company possessed only one officer at this time other than the company commander. This officer was Lieutenant Brokaw who commanded the first rifle platoon. He had just joined the company the day before, having been transferred from Headquarters Company of the battalion where he had commanded the assault gun platoon. Therefore, the company commander knew little of this officer's ability or experience. The second rifle platoon was commanded by its platoon sergeant, Technical Sergeant Lee. This platoon had lost its leader the day previous when he had been wounded during action involving his platoon which had been riding the tanks of the leading platoon that day. The third rifle platoon was commanded by Technical Sergeant Cook.

The company had followed an SOP in preparing for this type of operation. Each rifleman carried a cartridge belt and two bandoliers of caliber .30 ball ammunition. Experience had proven that since the company so often employed "marching fire" and its consequent rapid expenditure of ammunition, this method of providing ammunition for the individual rifleman did not burden him excessively when he was riding a tank. In addition, each rifleman carried one white phosphorus and one fragmentation type grenade attached to the "D" ring of his web pack suspenders. Submachine guns were taken from half-track drivers and given to riflemen in exchange for rifles and carbines. Everyone in the company carried a full canteen of water and one day's emergency D ration. Additional rations, water and ammunition were carried in the Service Company vehicles at the rear of the column. Each rifle platoon was required to designate and arm a bazooka team. Spare batteries were carried by SCR-300 radio operators in 60mm mortar ammunition bags. All company light machine gunners were equipped with single asbestos gloves, appropriated from unit kitchens, for use in firing the weapon from the hip in assault fire. Resupply of the company was to be accomplished during brief night halts when directed by the task force commanders.

The morale of the men of Company C was good. In previous action they had repeatedly demonstrated their ability and efficiency by quickly disposing of any enemy resistance encountered and had provided for the uninterrupted advance of the armor. However, fatigue, dust, the hot fumes and confinement resulting from this prolonged period of riding tanks had made the men restless. A noticeable effect upon discipline appeared. The men had been warned about accepting food or drink passed to them by civilians along the route

U. S. Army

Small unit Armored Infantry action—rough business.

and the noncommissioned officers were instructed to be alert to interfere with such practices.

Just before the task force moved out on the afternoon of March 29, the company commander of Company C received a radio message from the task force commander passing on information concerning the enemy received from the division G-2. The substance of this message was to the effect that a civilian source had reported approximately one hundred enemy troops from Denmark had detrained at Burgeln the night before and were heavily armed with panzerfausts. This enemy force, it was further stated, had forced the local civilian populace to assist in the unloading of ammunition and in preparing intrenchments.

This information indicated immediately to the company commander that plenty of resistance could be expected at Burgeln.

The task force moved out and the commander's plan worked admirably for the first two towns along the route, Bauerback and Ginseldorf; but when the burgomeister from Ginseldorf was sent to the next town—Burgeln—he did not return!

The reconnaissance force, without waiting for the arrival of the task force, then attempted to take the town, losing three light tanks by enemy panzerfausts. They then deployed, continued firing into the town, and notified the task force commander of the situation by radio. It was about dusk when the task force arrived on the outskirts of Burgeln.

The task force commander ordered the leading tank platoon and the artillery battalion to shell the town. This was done until flames had started through the town from the terrific volume of fire. Then the task force commander ordered the leading elements of the column to barrel through the town, evidently under the impression that the intense shelling had driven the enemy out. The leading tank had just crossed a railroad embankment on the outer edge of the town when it was disabled by enemy panzerfausts. Here it became an effective road block for the remainder of the column, as the road was very narrow.

The company commander of Company C had dismounted from the tank he had been riding when the column halted and went forward to try to get a better view of the terrain. In the remaining light he noted a small village about three hundred yards to his front with its two-story houses astride the dirt road on which the column was halted. A steep railroad embankment lay perpendicular to the road and approximately fifty yards short of the first building of the town. In the dim light it appeared that the railroad crossed over the road and the leading tank was burning in the road between the railroad and the first building of the town. Further on, ahead of this tank, were the hulls of the three light tanks from the reconnaissance force which had been knocked out earlier. The railroad embankment was too steep to permit a crossing elsewhere, thereby canalizing the movement of the task force armor to the road.

U. S. Army

Armored Infantry under sniper and MG fire.

Darkness had fallen and the fires in the town seemed to burn brighter than ever. It was at this moment that the task force commander contacted the company commander of Company C personally and ordered him to take his company in and clean out the town so that the column could proceed. He informed the company commander that he would try to effect recovery of the disabled tanks from the road so that they would not obstruct the way of the column once the town had been cleared. The company had dismounted as soon as the column had halted and was deployed now with a file on each side of the road awaiting orders.

Based on his hurried and limited reconnaissance, the company commander had made his plan. He called the rifle platoon leaders to him and issued an oral order. The first platoon would attack on the left of the road, cleaning out all houses in its zone, and proceed for a distance of three hundred yards beyond the other side of town. The second platoon would do the same thing in its zone on the right side of the road. The third platoon would be in support, following closely the first platoon, and would maintain contact with rear elements of that platoon. The platoons would move out initially astride the road with squads in column for better control. The company commander would move between the first and third platoons. Company medical aid men were with their assigned platoons and a medical jeep with litters was parked near the task force commander's vehicle.

No further firing had taken place on either side when the platoons quickly took up their assigned positions and formation and moved in to the attack.

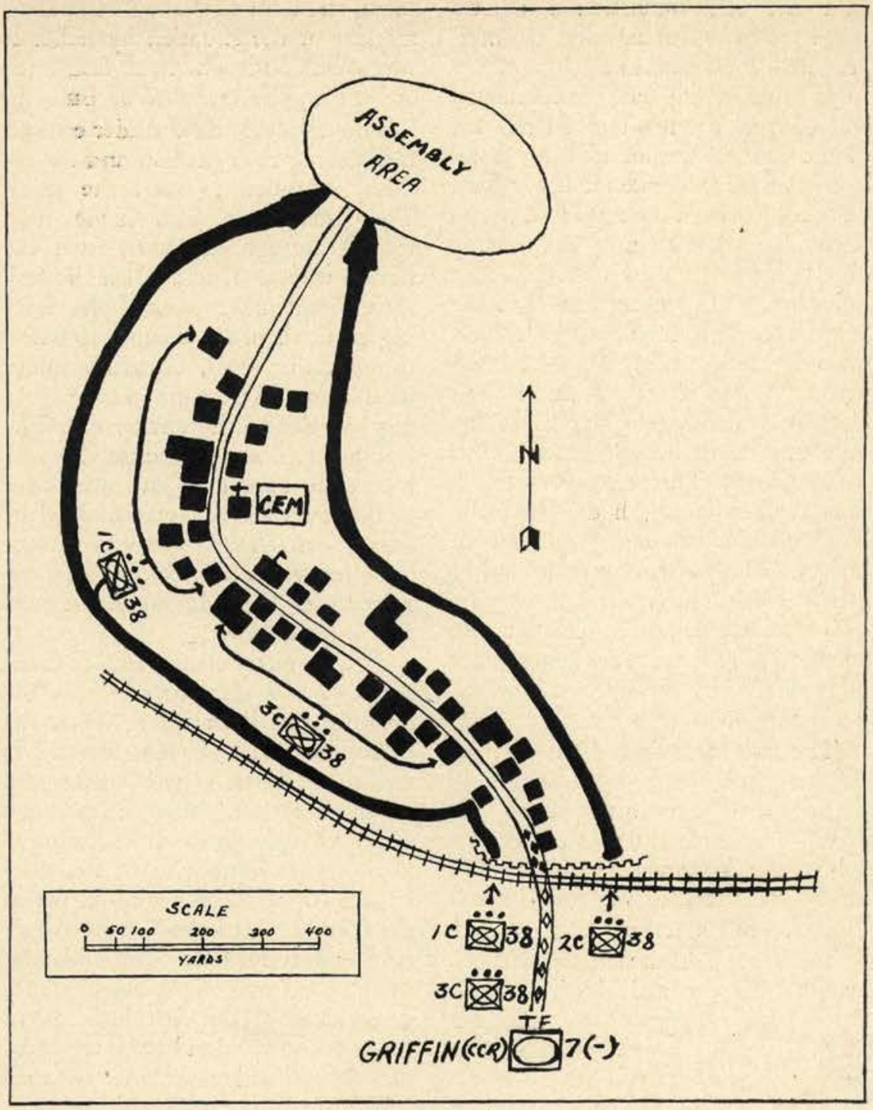
The Capture of Burgeln

The men initially started forward rapidly but as the leading elements of the company approached the railroad embankment the movement slowed down while the first and second platoons carefully crossed the embankment checking for the presence of any dug-in enemy. There was a pause of a few moments while the platoons were reconnoitering the embankment. Experience had taught them the tragic results of overlooking a thorough inspection of such positions before passing through them. Strangely enough, not a shot had been fired as yet. The embankment was covered with quite a network of intrenchments, but all seemed unoccupied. This proved puzzling to the men and they moved forward from this point with a great degree of caution.

As the company approached the town, flames from the burning buildings lent an eerie aspect to the entire scene. Leading elements of the company, nearing the first houses within the town, were aware of the intense heat from the fire. The men were silhouetted against the light furnished by the flames and the company commander was hoping and silently praying that the leading platoons would reach the cover afforded by the first houses quickly, thereby minimizing the length of time they were exposed.

The Second Platoon

It had become evident by now that the second platoon would reach the first house in its zone before the first platoon reached its first building since the distance to the house was considerably shorter. Leading elements of the second platoon initiated a sudden rush for their first house.



The Burgeln Area.

The thought had persisted in the mind of the company commander that it was strange that no enemy fire had been received by the company as yet and he had just about decided that the enemy must have withdrawn from the town during the artillery and tank fire when the familiar sound of a German Schmeiser machine pistol, commonly called a "burp gun," was heard. The burst had seemed to come from in front of the second platoon and it was followed quickly by a series of muffled explosions and rattle of small-arms fire. Figures could be seen darting into the first building in the zone of the second platoon and in a few moments the company commander received a report from Sergeant Lee on his SCR 300 radio stating that the second platoon had taken the first building successfully, killing one of the enemy and wounding another within the house. Sergeant Lee further reported that he was surprised at the extreme youthfulness of the enemy encountered thus far, estimating their ages at about sixteen or seventeen. This was a considerable change from the Volksturm, or people's army, encountered heretofore. Complaining of the unbearable heat from the buildings, Sergeant Lee advised that his platoon was now headed for the next building in its zone.

It was difficult to understand how anyone could continue to utilize and occupy positions in buildings in flames such as these, but it certainly was a good indication of the type of enemy we were meeting.

The First Platoon

As mentioned before, the first platoon had a little further to go to reach their first building. When they had reached a point about twenty-five yards from the building, the cracking of enemy small-arms fire was heard. The fire was coming from the house directly to the front of the first platoon and the platoon immediately returned the fire. One squad was sent out to the left in an encircling movement, taking advantage of the darkness existing on the outer edge of the town, in an effort to approach the house from a flank with better concealment.

Lieutenant Brokaw soon reported that the house had been taken by the first platoon with three enemy killed in the basement and two wounded on the first floor. He, too, remarked upon the youthfulness of the enemy and advised the company commander that he was leaving part of his platoon in the vicinity of the house and leading the remainder forward in a dash for the next building which was about seventy-five yards from the first.

The company commander contacted the task force commander by radio and advised him that a toehold in the town had been secured by the company and that they were now proceeding further into the town.

Sergeant Cook was ordered by the company commander to move his platoon to positions in rear of the house just taken by the first platoon.

As the company commander moved past the burned out light tanks, he noticed that each tank had been hit several times by enemy panzerfausts and in each instance in different portions of the tank.

Change of Plan

Realizing that his present plan was inadequate in that it needed more speed, the company commander decided to change his plan. The platoon sergeant of the first platoon was ordered to reorganize his platoon hastily and both the first and third platoons were moved to the left flank of the town. From this position they were deployed in a skirmish line extending the length of the remainder of the town on that side of the road with the third platoon on the right.

Sergeant Lee had reported by radio that the second platoon had almost cleared the entire town in their zone and was instructed to move his platoon for a distance of 300 yards the other side of town upon clearing the last house. He was also advised at this time of the company commander's new plan for the employment of the first and third platoons.

The first and third platoons were led by the company commander in the flank attack on the remaining houses. Moving quickly under the concealment offered by the darkness on that side of the town, the two platoons were soon near enough to begin their assault on the houses. Following the firing of bazookas and the tossing of grenades, both platoons rushed the remaining houses almost simultaneously. The houses were entered and following a brief but intense fire fight, during which both platoons received a number of casualties, the buildings were cleared. The enemy, later identified as elements of the 166th Infantry Division, had also suffered numerous casualties and losses through capture.

The first and third platoons moved down the road on the far side of town and contacted the second platoon. The task force commander was advised that the town was clear and thus, the capture of Burgeln was successfully completed following almost two hours of fighting.

Analysis and Criticism

In reviewing this operation, there are several points worthy of discussion.

The task force commander's plan to have a reconnaissance force precede the main body of the task force along the route of advance was a good one. However, this reconnaissance force, it will be remembered, consisted of only a platoon of light tanks and an assault gun platoon. A notable weakness here was the omission of infantry to provide security for the armored element of the reconnaissance forces, particularly in view of the information which had been received concerning the enemy at Burgeln. This omission resulted in the loss of three light tanks from enemy panzerfausts. Had a platoon of armored infantrymen, or even a squad, from Company C been included in this force, it is possible that these losses might have been avoided. The infantrymen would have been able to provide close-in protection for the tanks. By the same token, the reconnaissance force commander should not have attempted to take the town without infantry.

The radio message received by the company commander from the task force commander transmitting intelligence concerning the enemy in the vicinity of Burgeln is an excellent example of prompt and timely dissemination of information from higher headquarters. However, I am inclined to believe that this intelligence was not utilized properly by its recipients. With this intelligence, the tanks should not have been permitted to lead the column in an effort to break through the town without first having the dismounted infantry precede and provide close-in flank protection for the tanks. The result was the loss of the leading tank in the column and its blocking of the road.

In view of the necessity for the hurried employment of Company C and the lack of available time for planning and reconnaissance, it is felt that the company's plan for taking the town was adequate. However, as was soon discovered on the ground, an approach or direction of attack from the flank of the town would have provided more concealment and space for maneuver.

The individual who became an unnecessary casualty as a result of lack of self-control and discipline emphasizes the need for constant, close supervision and control of men by officers and noncommissioned officers to prevent them endangering themselves or their unit.

The enemy proved that, although disorganized by pursuit operations, his capabilities should not be underestimated. The disabling of four tanks, creation of numerous casualties, and the delaying of the advance of a much stronger force for two hours is evidence of the discipline, morale, and training of the enemy.

Some of the Lessons

Some of the obvious points that come to mind in a study of this operation are these:

All intelligence should be considered in the formulation of tactical plans. At the same time, night attacks during pursuit operations may have to be carried out with little or no preparation in order to maintain the impetus of advance. Certain other features of the pursuit stand forth—units should be self-sustaining; changes of direction should be employed; by-passing of certain points should further the action; infantry should be with the armor for close-in support, and should be rotated.

Aggressiveness should not be negated by the carelessness of overconfidence. The use of bazookas in pairs and threes from well selected positions upon the same target should be developed.

It is obvious also that a small unit, properly trained and disciplined, and with an aggressive spirit and confidence in its weapons, can successfully delay the progress of a much larger force.

In the Ruhr encirclement, Burgeln was but a minute point in an over-all operation. To the men of Task Force Griffin, on the scene, it was a lively bit of action.

The Case of the SIDEHILL BADGER

Now is the time to lay the groundwork to make available Signal Officers qualified for Armor's exacting requirements. Let's set a precedent by learning the *easy* way.

Co-authored by
LT. COL. C. F. FIORE
MAJ. F. M. DAVIS

THE sidehill badger (*taxidea Americanus sidehillensus*) is a kissing cousin of the common garden variety of badger (*Meles taxus*); but where the common badger has all four feet firmly planted on the ground wherever he may be, the sidehill badger is a unique product of his environment, and accordingly is of use only in his own immediate surroundings. The sidehill badger inhabits the hills of the Middle Atlantic States; and because he lives on a hill, he has developed a physical peculiarity to adapt himself to this hillside existence. His foreleg and hindleg on the downhill side are an inch or two longer than his foreleg and hindleg on the uphill side. This happy arrangement permits him to navigate his native hills on an even keel, giving him an advantage over his badger cousins should they visit the locale.

Suppose, however, that the sidehill badger—to meet the exigencies of badger service, let us say—is transferred to an area where there are no hills. What happens? His unusual physical arrangement causes him to travel in circles, with the result that so far as any contribution to badger economy is concerned, he is like an automobile wheel whizzing in the mud—a great deal of activity, but very little progress.

The Army may be nurturing a clan of sidehill badgers; and while they are performing very well in their own environment, the time is not far off when they must be transplanted from their native heath to meet the exigencies of a suddenly expanded Army. What will be the result? Again, the automobile wheel—a lot of activity, but no tangible results.

Officers of the Signal Corps may object to being compared to sidehill badgers, but the simile is used illustratively rather than maliciously to emphasize the plight of a Signal Corps officer who, one of these days, will get orders reading, "........ report to Umpteenth Armored Division at Camp Crinklebatt for duty as Division Signal Officer . . ." Similar orders will assign a host of trained Signal Corps officers, well-grounded in signal communication, to duty with armored signal companies of new armored divisions.

"What's wrong with that?" somebody asks.

Plenty.

Consider our current armored division organization. The division is authorized one division signal officer (lieutenant colonel), one assistant division signal officer (major), and ten additional company-grade officers in the armored signal company.

Twelve officers, then, to ride herd on the myriad communication requirements necessary to get an armored division's protected fire power, mobility, and shock action to grips with the enemy; that is, 12 officers exclusive of the many communication officers and communication specialists who provide communication for the elements of an armored division below division level.

There are three active armored divisions in the Army today. The 3d Armored Division at Fort Knox and the 5th Armored Division at Camp Chaffee are training recruits; the 2d Armored Division at Camp Hood is undergoing tactical training. So then, we have one armored division—the 2d—as our sole source of armor-qualified officers for the armored division signal staffs and armored signal staffs and armored signal companies required for any expansion.

In World War II we expanded Armor roughly 1600%—actually more than that when many separate tank battalions are included. In any future expansion not only will there be armored divisions galore, but there will be the tank battalions of the infantry divisions, armored cavalry regiments, and corps tank regiments, all with communication equipment, problems, and concepts peculiar to Armor.

A third World War would find us right back where we started from, with a probable expansion of 1600% or more. The situation will be aggravated, however, by a tremendous increase in armored division communication equipment. The current armored division T/O&E calls for almost twice the number of radios prescribed for the World War II armored division.

Should a mobilization for World War III come, must we fill our Signal Corps officer requirements in Armor from a pool of "sidehill badgers"? To be sure, they may be well-trained signal officers with a keen knowledge of the use of radar, radio, wire, facsimile, teletype, and television, but—here's the kicker—do they know Armor and Armor's requirements for a highly mobile communication system?

What if they don't? Didn't we do pretty well in World War II with armored communication? Didn't we have plenty of Signal Corps officers with armored divisions? Didn't the civilian components kick in their share? And so on *ad infinitum* go the rhetorical questions to refute our sidehill badger argument.

Sure, we got along all right in World War II—but think of how much better we'd have gotten on if we had had available Signal Corps personnel who were Armor-indoctrinated—division signal officers who joined their armored divisions knowing something beyond the basic premise that a tank was a gadget to keep water in. Almost without exception, signal officers joining armored division signal staffs and units in World War II had to learn Armor after they joined; their education in Armor started late and was gained under the pressure of readying units for combat; and the payoff came the hard way.

You wouldn't send an infantry officer off to become gunnery officer on board a battleship just because he happened to know something about weapons—so why hamstring Signal Corps officers by sending them to armored divisions when they're not Armor-minded?

Today is the day to develop the signal officers for future armored divisions. Any officer serves best when he is well-grounded in all phases of his job. We train our future battalion and combat command commanders in our schools now; yet we leave our signal officers to the hit-or-miss probabilities of wartime mobilization, with the result that we're issuing engraved invitations to a disaster based on General Patton's oft-quoted warning: "Tanks without communication are just so many pieces of helpless junk cluttering up the road."

What's the answer to this obvious *non-sequitur?* What's being done to correct it?

The Corrective Process

Fortunately, the sidehill badger is being hunted down. In recent informal discussions between The Armored School, The Signal School, and the Chief Signal Officer, the case of the sidehill badger was brought to light. Each school and the Chief Signal Officer offered suggestions to solve the problem. Further discussion now under way gives promise of increased Armor-Signal cooperation.

The suggestion that Armor provide qualified officers to present armored instruction and to represent The Armored School on the Staff and Faculty of The Signal School met with the approval of both service schools. It was further felt that Armored Cavalry officers on the Staff and Faculty at Fort Monmouth could be liaison officers with the engineering agencies of the Signal Corps, thereby effecting closer integration of the Signal Corps-Armor communication development program.

The Armored School at Fort Knox has at present several Signal Corps officers assigned to the Staff and Faculty. This practice of maintaining a nucleus of Signal Corps officers at The Armored School is not expected to change.

As an additional aid to this enhanced program, the Signal Corps plans to send signal officers to the Advanced and Basic Officer Classes at Fort Knox. This will provide the Signal Corps with a career group of armored signal experts.

Similarly, The Armored School suggests that more Armored Cavalry officers be detailed to Advanced and Basic Signal School Courses so that the Regular Army component will include Armored Cavalry officers who know signal equipment and who understand the Signal Corps viewpoint.

Keeping in mind the fact that the source of future division signal officers will include civilian components, it has been suggested that Associate Courses at both The Signal School and The Armored School include an exchange of Signal Corps and Armored Cavalry officers.

Effective Exchange

Coordination between the two branches has likewise been improved in development agencies. Signal Corps Laboratory engineers are attending conferences and equipment tests at Armored Cavalry posts, while interested Armored personnel are keeping in constant touch with the Signal Corps development experts. Thus, both technical and tactical design is evolved from a firsthand, on-the-ground picture of Armored requirements.

The net result of these measures will be to provide the Army with a backlog of Armor-Signal indoctrinated personnel capable of stepping into key communication spots within the armored division. When the time comes, there will be a source of division signal officers who know Armor, have worked with Armor, and best of all, can operate in terms of Armored communication.

The sidehill badger? Look sharp! It's just about extinct.

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the Index for the last two volumes

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and a selection of articles and features which carry on a pattern that has oversubscribed every issue of the year.

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U. S. Army (from official German sources)

CARDED

Introduction To German Armor

Part 2

by GARRETT UNDERHILL

Assault Artillery

DURING World War I and the 1920's, many armies experimented with various types of self-propelled guns. By the 1930's, the Allied powers of the West were broke, and the Germans were concentrating on tanks.

Nevertheless, the German Artillery (could they have been empire building?) had the idea before the war for a special armored support vehicle—which they called the assault gun. When it came out, von Fritsch—still Army chief—assigned it to the Infantry. The Artillery continued to supply the crews, and through the war ran the Assault Artillery School. The assault guns were first used in breaking away through the Ardennes and smashing through the French positions on the Meuse in 1940.

Properly speaking, the assault gun was an outgrowth of the light 75mm infantry howitzer. As such it had its roots in German World War I experience. Essentially different from infantry accompanying tanks of other powers (both in appearance, and in the fact that it relied wholly upon its shell-firing armament), it had very special tactics. It was the German version of an infantry-accompanying tank.

As a result of war experience, a terrific expansion of assault artillery took place in 1942. Organizationally, assault artillery battalions remained GHQ troops, being assigned to divisions for operations. SS panzer divisions had integral assault gun battalions up to the end.

As the war progressed, assault artillery (*Sturmartillerie*) developed. The original assault gun (actually a howitzer) blossomed into a family which was made up of *Sturmgeschütze* (assault guns, armed with *Sturmkanone*), and *Sturmhaubitze* (assault howitzers). The latter used the 105mm light field artillery howitzer in the light model. In the heavy model the 150mm heavy infantry cannon was mounted. This latter was named the Brummbär (Grizzley Bear).

The German system was to mount low in the front of a tank chassis a gun with very limited traverse. The front was well armored. In the original *Sturmgeschütz,* the top was protected only by folding plates. However, in the 1942 expansion, the IV's long 75 was fitted, along with the IV's commander's cupola. The hull and fighting compartment was armored all over.

Generally speaking, by avoiding a turret the Germans were able to mount in the chassis of any given tank the gun carried by the next larger tank.

When the long 75 was fitted to the original *Sturmge-*

German mechanization is one thing. What the German soldier did with it is quite another. A close study of German military might is a necessary corollary to the maintenance of perspective in our own defense setup. There is deeper significance than model numbers behind this description of Nazi armored might. Second of two parts.

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schütz chassis, the improved assault gun had a weapon that could fight armor. This capability resulted in a metamorphosis; beginning in 1943 the original assault gun type became a hybrid assault gun tank destroyer.

The new models took the name of tank destroyer—*Panzerjäger*, or *Jagdpanzers.*

The armored force, which had jurisdiction over tank destroyers, objected to the limited traverse of the gun. The artillery and infantry overruled them. They preferred the added security afforded by the silhouette of the turretless vehicle. They did not think that the added utility of a turret—which the armored force thought useful to engage targets of opportunity in proper armored force and tank destroyer missions—outweighed the proven value of the original squat silhouette design.

But the development of this type of armor—apparently not too well understood outside Germany and Russia—is a story in itself. Assault artillery might be termed an armored force trained for and assigned to the infantry. Assault artillery units were in a different class from breakthrough and other tank units which had, as part of their training, practice in tank-infantry teamwork.

The German Infantry and Artillery arms were much satisfied with their version of assault artillery. They effected no basic changes in tactical doctrine during the war; they only expanded basic principles, and added the AT function. The priority these senior arms attached to assault guns is well demonstrated by production records. While Germany was turning out 23,000-odd tanks in the war years 1939-44, she also turned out over 10,000 pieces of assault artillery.

Assault Mortars

The ultimate in assault weapons was the great *Panzersturm-Mörser Tiger*—a 305mm (15-inch) rocket projector mounted on the very heavily armored *Jagdpanzer* edition of the Royal Tiger. Eighteen of these monsters were built as a result of the slow progress the Germans made in Stalingrad street fighting. Hitler felt that the 5-foot long, 761-pound projectile this weapon fired could blow apart entire buildings. The hull could carry 12 of these rounds, which could be reloaded from the inside, and which could be fired to a range of 6,000-odd yards.

Essentially the *Pz.Stu.Mrs.* (assault mortar) was built to perform the same function as the British R.E.M.E.'s exterior-loaded "Flying Dustbin" as fired from a Churchill tank. But 6-inch armor, sloped at 45 degrees, gave the assault mortar even better frontal protection than was afforded its hybrid TD edition, and a greater degree of invulnerability than the Churchill.

The assault mortars appeared when the war was going the wrong way. Their only useful deed—in Nazi eyes—was their assist in the demolition of the Warsaw ghetto.

As might be expected, the Krupp-Egelin people went Henschel one better. They had on the fire a *Bear-Mouse* mounting an ordinary 305mm artillery mortar.

When the Germans found themselves swamped with hasty self-propelled gun developments, their traditional orderliness went by the board. For a while they milled about in some confusion. When the dust died down, the system for designating assault artillery was roughly as above. The chassis was called a *Sturmgeschütze* or *haubitze* plus the number of the tank it had been designed for; the gun was a "cannon" or howitzer—the Germans having got themselves in a hole by originally using for a howitzer a name which covered both guns and howitzers. The common types were:

Assault Guns *7.5cm Stu. G. 40(L/43)*	[III tank chassis, 7.5 *Sturmgeschüze(L/24)* as armament the original assault gun.]
7.5cm Sturmgeschütz	[III tank chassis, *7.5cm Sturm-Kanone 40(L/43)* as armament—later *L/48;* prime assault gun of the war.]
Assault Howitzers: *10.5cm Stu. H. 42*	[III chassis, *10.5cm Sturmhaubitze 42*—which was the artillery 105 of 1942; looks almost identical to the *Stu.G. 40.]*
15cm Stu. H. 43 *(Brummbär)*	[IV chassis, with 150mm infantry howitzer *s.i.G.* 33 reissued as *15cm Sturmhaubitze 43.]*

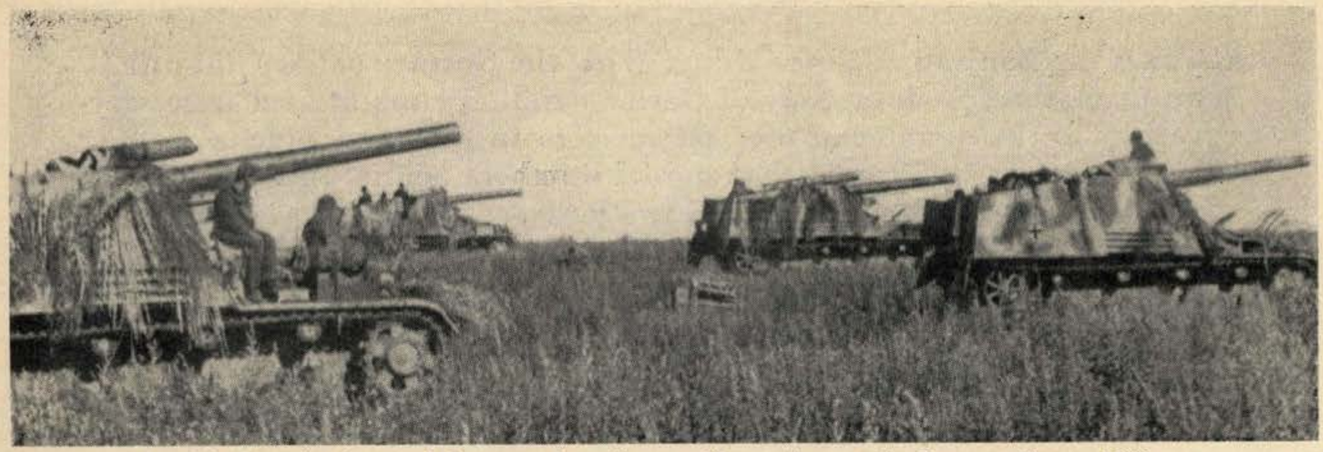
Tank Destroyers

Prior to the war the German Army seems to have given little serious consideration to the development of mobile, well-protected antitank pieces. AT for armored divisions was towed—although in 1939 the title *Panzer jäger* (tankhunter, or fighter) began to replace the defensive-sounding "antitank" designation. In 1939 and 1940 some improvised SP TD's saw action. They consisted of standard or captured AT guns mounted on obsolete tank chassis, and lightly protected by armor. Such a one was the job which mounted a Czech 37mm gun high on a I tank chassis.

Wartime Improvisations

Soon after the armies flowed into Russia, and Rommel began desert operations, a crying need for tank destroyers was felt. Antitank guns of all sorts were slapped on motor vehicles and on old or captured armor.

In 1942 German industry utilized production facilities of the outmoded II tank to turn out tank destroyers with ordinary antitank guns perched atop the hull, with some



Bumble Bees in clover. A battery of mediums—Hummels—on the Eastern Front, 1943.

splinter-proof armor on the front and sides of their open-topped fighting compartment. The guns used were the standard *7.5cm Pak 40* and the captured Russian M1936 76mm field gun *[7.62cm Pak 36 (r)]*. Production facilities of the Prague BMM tank factory, which had turned out the *Pz.Kw. 38 (t)*'s, were used for the same purpose, and were furnished with the same guns.

In 1943, new carriages began to appear. The motors of the II and 38 tank chassis were moved forward to permit the gun to be mounted low, and the crew to stand on the bottom rear of the hull. Guns were the *7.5cm Pak 40*. French tank chassis were also used, as was the big Lorraine ammunition supply tractor. In all cases the fighting compartment was open-topped, and the guns provided with little traverse.

For a while there was as much variety in terminology as in types. *Pak (sf.)* (for *Panzerabwehrkanone* and *Selbstfahr*—in other words, SP AT) and *Panzerjäger*. plus gun caliber, were widely used. (Improvised chassis were called *Selbstfahrlaftte* (SFl)). At first the revised chassis were called Panzerjäger, followed by II or 38. Complete weapons got the *"suggestiv namen" Marder* (Marten). Complete weapons were also designated by gun title, *(sf.)*, and *auf* followed by the name of the chassis.

Finally, *Panzerjäger* was reserved as a name for the chassis of the hybrid assault gun-TD's, the improvised chassis all being called *Fahrgestell* (motor carriage). The complete weapons became *Pak(Sf.)*. Thus, *7.5cm Pak 40/2 (Sf.) Marder II*, with detailed title *[7.5cm Pak 40 (L/46) Fahrgestell II]* following, if it was necessary to make clear just what weapon was being dealt with.

In 1943 the new long 88 was mounted on a *Fahrgestell* IV chassis, the resulting TD being called the *Hornet*, then *Rhinoceros (Nasehorn)*. In 1943 there also showed up for the Kursk offensive an Army attempt to salvage the Horsch Tiger. These had the new "88" mounted in the front of a heavily armored box placed toward the rear of the chassis. At first called the *Ferdinand* after its designer, these were re-named *Elephant*. Some were used in Italy.

The *Elephant* and *Rhino* epitomized German troubles with early TD efforts. To say they were mechanically unreliable would be an understatement. In one Elephant company, more vehicles fell out during their baptismal approach march than went into action. But at least the Elephant had armor—which the clanking, wheezing tin-plate TD's did not.

All the light, open-topped *Pak (Sf)*'s might best be called self-propelled antitank—to differentiate them from real tank destroyers. While their fire power and mobility were fully exploited, their vulnerability did not permit offensive action. When engaging tanks, they did not follow up defensive action with immediate counterattack, as did the better protected assault guns.

Many of these light TD's were used as single support or AT guns in Italy and in the West in 1944-45.

The Hybrid Assault Gun-Tank Destroyer

But in 1943 work was going forward on tank destroyers which met assault gun requirements, if they did not satisfy armored force demands for a turreted TD. What the armored people wanted was a tank.

These re-workings of the assault gun design principle had better-sloped armor than the original *Stu.G.*'s. They adhered to the original low silhouette, gun with limited traverse, and good frontal armor—with fair armor all over. These new vehicles used the 38 IV, Panther, and Royal Tiger tank chassis, and were classed as light, medium, and heavy tank destroyers. The Germans used the title *Panzerjäger* or *Jagdpanzer* for these chassis (as in *Panzerjäger Panther*). Guns were called *Pak*.

Armament followed the system laid down in assault gun development; each class of *Jagdpanzer* mounted the gun of the next heavier class of tank.

The light hybrid TD being introduced at the end of the war was the *Hetzer* (Tormentor), a 17½ ton complete re-design of the Czech *Panzerjäger* 38 chassis. Armor was over 2-in. in front, but less than an inch on the sides. The *7.5cm Pak 39 (L/48)* was a modification of the latest 75 carried by the IV tank.

The Germans regarded the Hetzer as an excellent weapon. They planned to insert a company of them in the T/O of every infantry division, where they were to serve in either assault gun or TD roles.

As the IV tank began to pass into limbo, efforts were made to use its chassis for a light *Jagdpanzer IV*, also mounting the *Pak* 39.

In most installations no muzzle brake was fitted on this new-model high-velocity 75. The *Jagdpanzer IV*'s chassis, being roomier, could carry all of 76 rounds to the Hetzer's 41. (Ammunition stowage was always a problem for German assault guns and TD's; supply had to be handled by ammunition-carrying tanks and armored half tracks.) But though the *Jagdpanzer IV* was also a mile an hour faster than the Hetzer, and had better armor (it weighed 27 tons), it was ruled out in order to capitalize upon extant Czech industrial potentials, and concentrate German efforts on heavier armor.

The medium hybrid TD was the 51-ton *Jagdpanther*. It mounted the Royal Tiger's 88, (*Pak 43/3* or */4*), on the *Panzerjäger Panther (Pz. Jäg. V)* chassis. The gun had only 26 degrees traverse, but the transmission and suspension enabled the driver handily to swing his tank to pick up targets on which the gunner couldn't otherwise lay.

While not as scarce as hen's teeth, nevertheless *Jagdpanthers* were never plentiful enough to be used in by-the-book tactics—either in assault or TD roles. In Normandy the Germans dug them in (the kind of thing that normally would give the armored force school faculty apoplexy), and used them to connect up sparsely settled German positions with the telling fire of its powerful gun.

The heavy hybrid TD was the *Jagdtiger (Pz. Jäg. Tiger* or *VI* chassis). This monster weighed close to 80 tons. Its frontal armor didn't have the slope of the light and medium TD's, but its thickness was about 10 inches. It mounted a relative of the 128mm *Flak 40*—a *12.8cm Pak 44 (L/55)*. However useful such a weapon might have been in assaults on fortified positions, with a speed of 9 to 12 mph cross country, it was no asset in mobile warfare—especially considering that it represented the steel weight of about a half-dozen Hetzers.

Only around 100 were built. On one of the rare occasions when one was used against Anglo-American forces, a US TD got on its flank, penetrated its 80mm side armor, and blew it to pieces.

Armored Artillery

Armored field artillery was at the tail end of the German armor program. The Germans never had anything like the US 105mm Howitzer Motor Carriage M7—either as regards armor or mechanical reliability. Until 1943, armored artillery was towed.

In that year light armored artillery batteries began to receive the improved light field howitzer with muzzle brake on a revised-type II tank chassis. The complete job was called the *Wespe*, or *Wasp*, the chassis being called a *Geschützwagen* II, or Gun Motor Carriage. Proper tactical designation was *10.5cm l.f.H. 42/2 (Sf.) auf Gw. II*. This 105 was also mounted on French light tank chassis, and on the French Char B.

In the same year the standard 150mm medium gun-howitzer *15cm s.f.H 18* was mounted on a hybrid III-IV *Geschützwagen* as the *Hummel* or *Bumble Bee*. The useful 105mm gun (*10cm f.K. 18*) never got an armored motor carriage for service issue.

These chassis were lightly armored and open at the top. They had the same mechanical unreliability as the improvised light TD's. They were built for indirect fire.

Towards the war's end, the Germans decided to replace these vehicles with *Waffenträger*, which could also carry AT guns and infantry cannon. These were Czech 38 tank chassis of the Hetzer version, with rear open-topped compartment into which towed artillery could be loaded. The pieces could fire from this mobile carriage, or be unloaded for conventional emplacement.

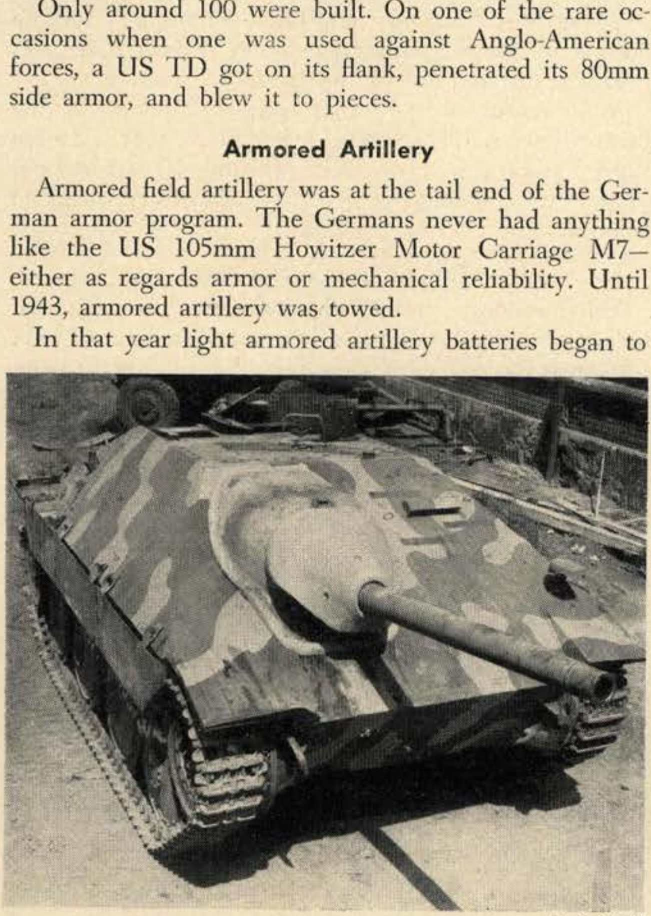
Since no *Waffenträger* units got into action, their utility was never determined. But the Army seemed to expect much from them.

Armored Infantry Cannon

The assault gun supplemented, but did not replace, towed light and heavy infantry cannon. Hence it was logical that, in armored divisions, lightly armored motor carriages for infantry cannon should be created.

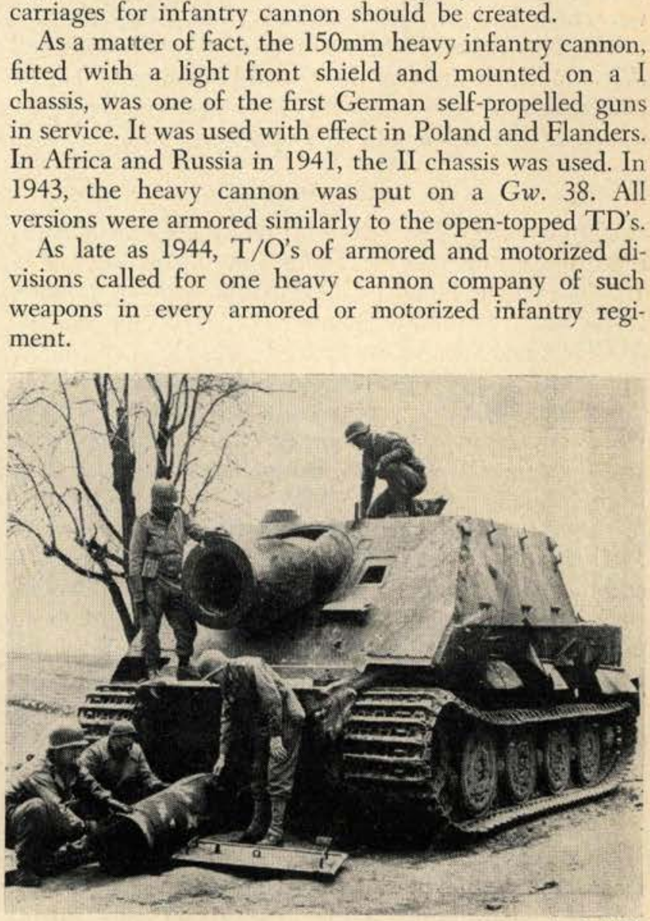
As a matter of fact, the 150mm heavy infantry cannon, fitted with a light front shield and mounted on a I chassis, was one of the first German self-propelled guns in service. It was used with effect in Poland and Flanders. In Africa and Russia in 1941, the II chassis was used. In 1943, the heavy cannon was put on a *Gw.* 38. All versions were armored similarly to the open-topped TD's.

As late as 1944, T/O's of armored and motorized divisions called for one heavy cannon company of such weapons in every armored or motorized infantry regiment.



U. S. Army

The Panzerjager Tank Destroyer.



U. S. Army

305mm Assault Mortar—Pz. Stu. MRS. Tiger

Tactics were the same as for towed heavy infantry cannon. That meant that direct fire was little used.

In about 1944, the heavy weapons platoons of armored infantry companies were allotted a fourth section equipped with armored light infantry cannon. This equipment consisted of the standard *7.5cm l.i.g. 18* on a 3-ton armored half-track. The guns fired forward only, as on other types of German self-propelled armored mounts. Earlier, some use had been made of *3.7cm Pak's* mounted in the front of 3-ton troop-carrying armored half-tracks. These used to go into action with Panzergrenadiers as early as 1941.

Armored Flak

The Germans undertook production of armored flak carriages very late—too late for any appreciable amount to get into action. However, single-mount self-propelled antiaircraft guns had been among the first self-propelled experiments tried by the armored force. One such 88 on a big half-track had a large, capacious shield for its gun crew, and armor for the vehicle crew as well. A 20 mm AA/AT gun had a similar experimental carriage.

But up until 1943, the Germans continued satisfied with numbers of standard 20mm *Flak 30's* and 37mm *Flak 36* mounted on unarmored half-tracks, and protected only by the normal ground-mount shield. No gun modifications were made, the pieces being removable for ground emplacement. The 20's were in the great majority, and were used for assault, support, and AT as well as for AA. Some 88mm Flak was so mounted, and used in the Flanders and French campaigns. Such pieces were organized in both Luftwaffe and Army units.

The Flak tanks—*Flakpanzers*—used the same 20's and 37's atop 38, II, and (for the 37's and quadruple 20's) IV tank chassis. At the end of the war, they were being assigned to armored regiments to protect tanks.

Recon Armor

Through the West Blitz of 1941, the German Army relied upon armored cars. There were three basic cars in 1939—two light Horchs (a 4½-tonner with an infantry LMG *M.G. 34,* and a 5-tonner with a 20mm and the *M.G.34*), and a heavy 8-wheeler (with 20mm and LMG in its turret). The light cars ran to only 8mm armor, but the 9½-ton heavy was practically a light tank. The 8-wheeler was in time re-armed with a 50mm gun, and then the IV's short 75, being turretless in the later modification.

This 51-mile-an-hour *Schwerer Panzerspähwagen (8 Rad)* was handy in the African desert. But in Europe, it and the *le.Pz.Sp.Wg. (MG)* and *(2cm.)* were road-bound.

German reconnaissance units therefore shifted to armored half-tracks *(Panzerschützenwagen)*—either the light 1-ton *(Sd. Kfz. 250* series), or the medium 3-ton *(Sd.Kfz. 251).* These continued in Recon service till the collapse of Germany. The 1 and 3 ton rating of these vehicles refers to capacity; the road weight of the medium armored half-track was 9.3 tons.

Late in the war some effort was made to rebuild the II tank as the *Luchs* or *Lynx, (Pz. Sp. Wg. II).* A new motor brought the speed up to 40 mph. The same attempt with a 38 tank armed with a 20mm gun was called a *Aufklärungspanzerwagen* 38. (The *le. Aufkl. Pz. Wg.* was a 1-ton armored half track.) But at the end of the war another 8-wheeled armored car was included in the simplified armor program.

Airborne Armor

The Germans planned to load the standard IV tank (short 75) in the monstrous Gigant glider—which was to use jato brakes to shorten landing runs. In 1942, by the time the Gigants were being readied, the Luftwaffe transport service was doing a Berlin airlift to meet emergency conditions on about every sector of Hitler's over-expanded *Lebensraum.* Allied air strength in the West hardly favored German airborne operations; the wide open spaces in the East appeared to make such operations unnecessary. Consequently the big gliders were never perfected as such. They were fitted with six engines and used in the Tunisian airlift.

Amphibious Armor

The Germans did not follow British, Russian, and Japanese attempts to introduce amphibious tanks. By the time they got close to war, anything light enough to float by itself failed to interest them.

The most significant German development in this line was an adaptation of the III's. These were fitted with floats for the projected 1940 British invasion. In stream crossing, fording by then was preferred to flotation. The long breather trunks—the Mouse, for instance, was originally designed to ford water up to 45 feet deep—were the equivalent of the submarine schnorkel.

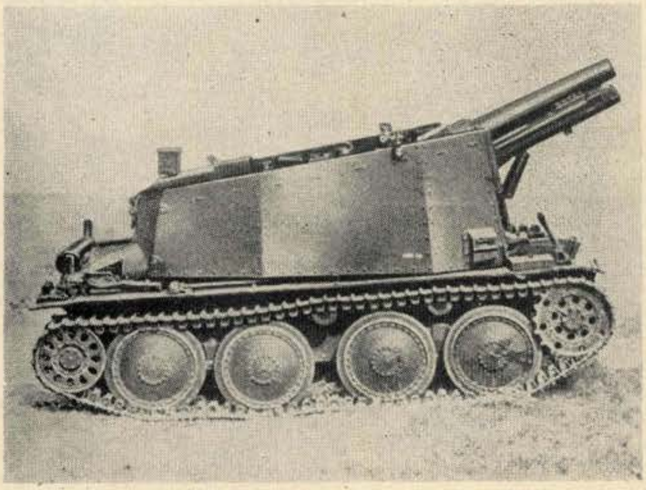
Miscellaneous Armor

There were armored CP's, OP's, ammunition supply tanks, tank recovery tanks, demolition vehicles, and tanks fitted for infrared fire control for night work.

Most useful of the miscellaneous armor were the flame-throwers. These were regarded as very valuable support weapons. Half-tracks, II and III tanks, and Hetzers were among the armored chassis fitted for flame warfare.

Too Little and Too Late

What is most amazing about German armor is that no effort was made at an all-out armor program until 1943—when it was too late. Then haste, loss of Russian manganese sources, fuel shortages (ruinous by the early sum-



Armored Infantry Heavy Cannon—GW.38.

Recon Armor—The Light Horch Pz. Sp. Wg. (M6).

mer of 1944) compromised the tank program that, at VE Day, was going great guns despite Allied air bombardment.

Considering that the US entered the war with its famous goal of 25,000 tanks to be built in 1942, it is amazing to consider that the Germans produced only 1,459 tanks in 1940, and 3,245 in 1941. Production in 1944—little affected by bombing—was only 8,334.

Of course, the number of assault guns and hybrid TD's made must be added to German armor totals—for in US Ordnance terms, they are tanks. Nevertheless, the total resulting is far, far outclassed by the flood of armor which after 1941 began to pour out from the Urals arsenals of Russia. The reputation that defective, numerically weak German armor maintained in the face of US, Russian, and British production appears to be an indication of the importance of tactics, technique, and training.

Under the circumstances, the rationalized, simplified program considered at the end of the war was long overdue. According to this program, the July to December production schedules were to aim at a monthly output of the following:

Hybrid Assault Gun Tank Destroyers	
Light Hetzers	1650
Medium Jagdpanthers	150
Heavy Jagdtigers	50
Tanks	
Medium Panthers	300
Heavy Royal Tigers	150
Waffenträger	350
8-Wheeled Recon Cars	50

The flood tide of Allied armor was to no small degree a cause of the stress put upon TD construction. Still, a strong factor weighing in the Hetzer's favor was its utility as an assault gun—the type of support armor that was the apple of the German senior arms' eyes.

The Mirror of History

Even so brief and superficial a review of German armor as this should be sufficient to convey the impression that no estimate of any phase of German armor, if made on purely military grounds, is likely to be sound.

Certain conclusions immediately stand out. It seems apparent that the importance of matériel can be very much overemphasized; and that armies—even produced by a military nation like the German—can be dangerously influenced by weapons that have more propaganda value than practical utility. It becomes obvious that political leaders, no matter what their military experience, ought not to concern themselves with details of armament.

But even if no direct military gain results from the study of further probing of German armor, then analysis of its tactical, technical, industrial, organizational, personality, and political elements is likely to benefit individuals. Introspection and self-analysis is always difficult—however advisable for healthy self-improvement; it is easier to learn by studying the experience of others. Moreover, the "inside" of one's own side can rarely be written, either officially, or in the press—if the people concerned are to continue to live together in the military and national community.

Therefore, to take a close look at a foreign force—and especially at a beaten enemy—resembles the holding up of a mirror. It becomes possible to get a viewpoint and an insight into one's own side, that might otherwise not be afforded.

The foresight of the Anglo-American forces has made the material available. Perhaps some junior officer can gain therein inspirations which will help him become the Fuller of the Future—or the De Gaulle or Guderian.

Perhaps—and this is most important—someone can properly debunk the Tiger tank and the whole popular concept of German mechanized might. The average American citizen and the average American serviceman would seem to be in great need of the kind of reassurance that could be derived from a summation of the role of German armor. They need to know that God-created man is the most powerful weapon of war, has been, and always will be. They need to know that the materialistic sciences are as likely to disrupt defense forces through neglect of the human element—just as they have in the last century disrupted civil life by stressing the material sciences and neglecting the study of man and the human sciences.

When the object of all military action is the will to fight, it is important for the American military and public to realize that a leading American atomic scientist can be so politically and sociologically naive as to become a Communist. If the public and military insist upon letting materialism loose in the National Military Establishment, then they can expect to have within their defense forces the same troubles which afflict civil life—the difficulties with labor, defects in management, frictions in everyday relationships, and the increasing rate of insanity which so alarms psychologists.

If the National Military Establishment falls completely under the domination of concepts which are the products of the last century of the industrial revolution, then the people can abandon all hope of ever having an Army which can do to an enemy what the German panzers did to Poland, Holland, Belgium, France, and the British Expeditionary Force.

Our Forces in the Far East

RDED

by FIRST LIEUTENANT CHARLES A. ROGERS

***"Of the Japanese people I can pay no higher tribute than to repeat that they have fully and faithfully fulfilled their surrender commitments and have well earned the freedom and dignity and opportunity which alone can come with restoration of formal peace."*—General MacArthur on the anniversary of VJ Day.**

CHARGED with a dual mission, the 1st Cavalry Division today is moving into its fifth year of occupation in Japan. Specifically, the program is designed to include the enforcement of SCAP directives and the maintenance of a rigorous training program aimed at complete combat effectiveness.

September 5th, 1949, saw the fourth anniversary of the 1st Cavalry Division's official entry into Tokyo. It was the first time in the Division's history that it had been called upon to take part in that type of operation—the occupation of the homeland of a defeated enemy. In addition, the division had been chosen to occupy the Tokyo area, which in itself was an assignment of consequence and importance. Tokyo, with its teeming millions, was not only Japan's greatest metropolis, but also the nerve center of the empire. From the Tokyo area stems the public reaction and opinion that eventually becomes the national trend of thought.

The members of the 1st Cavalry Division, although honored at the thought of being chosen to occupy this vital geographic position, felt the preponderance of responsibility. Besides carrying out the thousands of minor assignments peculiar to an occupation, it was a prime essential that the personnel be constantly on their toes, both on and off duty. It became the individual's responsibility, in addition to his regular duties, to be a first-class example of the type of man democracy could produce.

Today, the 1st Cavalry Division is charged with the responsibility for a geographic area of approximately thirty-two thousand square miles. This area is inhabited by more than twenty-one and a half million Japanese. To meet the needs of efficient operation over such an expanse, the elements of the division are stationed at strategic locations.

The setting which surrounds those members of the 1st Cavalry Division who stand vigil in Tokyo is a far cry from the battlefield for which they were and are being trained. From one certain point in Tokyo can be seen, all within the radius of a half-mile or so, the grimly beautiful old walls and Moat of the Imperial Palace, the long row of massive Western-style office buildings which were the headquarters of the huge "Zaibatsu" monopolies (recently liquidated), certain of the big structures that once housed the executive agencies of the Imperial Government, and the pyramidal tower of the Diet Building. Just across the broad tree-bordered avenue from the Moat and towering over the center of the scene, physically as well as figuratively, is the handsome Dai Ichi Building in which General MacArthur has his headquarters.

This is the backdrop upon which the cavalrymen conduct parades, reviews and ceremonies from time to time. Actual staging is usually upon the Imperial Plaza in downtown Tokyo.

The proper conduct of the occupation, and the natural American friendliness of the cavalrymen on the streets of Tokyo towards the Japanese, has been most instrumental in producing the desired effects. The implication of "desired effect" is simply that there is now rooted in the Japanese a respect and mutual friendliness towards the Americans. The effect produced by a comparative handful of American soldiers on the populace is completely unimaginable. The progress, in the orientation of the Japanese to democratic standards, is of such massive importance that the result may well cast its shadow on momentous decisions in the foreign policy of tomorrow.

Appraising the Tour

In looking back over the four years of occupation by the 1st Cavalry Division, the many, gradual changes in the over-all picture become more apparent. When the division first arrived in Tokyo, the initial mission was to assume control of the central portion of the city. Troops of the Seventh Cavalry Regiment guarded the American Embassy, where General MacArthur had taken up residence, and the Meiji Shrine, one of the mast sacred spots in Japan.

Daily patrols began the long task of locating, investigating and reporting all Japanese installations which had contributed to that nation's war effort, and there were many. All arsenals, factories, barracks, and storage grounds had to be examined and reports made of their contents. In addition, the division was concerned with the status of demobilization of the Japanese armed forces.

Of course, there were diversions from these heavy tasks for the war-weary soldier. First Cavalrymen went sightseeing in Tokyo. Cameras became as commonplace as shined shoes and sharply creased trousers. They examined the razed city blocks and the rubble left by the incessant bombings by American planes. They strolled along the Ginza (Tokyo's Broadway) looking over Japanese-made curios. They saw the earthquake-proof Imperial Hotel, designed by an American. They got along well with the populace too—especially the Japanese children (the leaders of tomorrow) who received small presents of chewing gum and candy from the cavalrymen. They were small presents to the Americans, but gifts of large proportion to the Japanese children who had been denied such things for so long.

The division's progress and success in carrying out the assigned mission from the outset of the occupation till February of 1949 was by no means accidental. Major General William C. Chase, commanding general of the division during that interim, was confronted with the dual task of carrying out his assigned military mission and of converting thousands of grim, war-torn fighting men into discreet emissaries of the four freedoms. The attitudes and opinions of the Japanese man-on-the-street in Tokyo today are a tribute to his leadership.

The departure of General Chase in February of 1949 saw the arrival of Major General John M. Devine. General Devine's assignment as commanding general of the division was followed closely by the arrival of a new task—an accelerated training program—complete combat effectiveness of the troops in his command. This extensive training program was timed well, for the late months of 1948 had brought with them hundreds of much-needed replacements.

This was different from the division's personnel situation in 1946 and 1947. In these years thousands of American troops were being returned to the Zone of Interior. Replacements were few and far between. Even the greater part of 1948 saw the division at extremely low strength, despite the need for a large-scale training program.

However, despite the lack of personnel, a training program was devised in early 1948 to lay the groundwork for a later and larger program. With a priority still being placed on occupational duties, the training program at this time was confined to the instruction of a solid cadre of commissioned and noncommissioned officers. A strong emphasis was placed on the training of these men, who were due to become the leaders and teachers of the replacements forthcoming from the United States.

[As The JOURNAL goes to press General Devine is on his way to assignment with First Army with Major General Hobart R. Gay assuming command of the First Cavalry Division.—EDITOR.]

The division's new replacements were, for the greatest part, newcomers to the army. Their total training, in most cases, amounted to the standard eight-week basic course given in the United States.

Training for the Prime Mission

On the premise that all recruits have completed basic training, they are initially given a few weeks of review in general military subjects. This is given in conjunction with a basic orientation in occupation duties. Upon completion of this course, tests are administered by a divisional testing team. The successful completion of these tests brings to a close that portion of the training program known to the division as Phase I.

Phase II is designed to afford the soldier-in-training a substantial amount of time in the field; living, working and becoming acclimated to the type of environment common to the soldier in combat.

Phase III is, in effect, a combination of the first and second phases. It brings together a need for application of everything the soldier has learned in the classroom and in the field. The prime feature of Phase III is the divisional maneuvers, currently being staged at Camp McNair within the shadow of mighty Mount Fuji. During this time, the individual soldier brings into play his total knowledge of actual combat against an enemy.

With the fall of 1949 at hand, the heyday of the occupation has come and gone. The occupation duties of the First Cavalry Division have settled into efficient routine. Most of the big operations have been accomplished, and the division has regained most of its strength. This has made available the time and manpower to pursue the prime mission assigned to this element of America's fighting force in the Far East—combat effectiveness.

NEWS NOTES

Organization for Handling of Foreign Military Affairs Established By Secretary Johnson

Secretary of Defense Louis Johnson recently announced the establishment of the Office of Foreign Military Affairs in the National Military Establishment and, simultaneously, designated Major General James H. Burns, USA (Retired), as his special consultant on politico-military matters.

The new office will operate in the field of foreign military affairs under the direction of the Secretary of Defense and with the advice of the Joint Chiefs of Staff and the Munitions Board. Its director will be N. E. Halaby, formerly a Foreign Affairs Adviser to Secretaries Johnson and Forrestal.

The Office of Foreign Military Affairs will coordinate and supervise the planning and execution of approved policies in the field of politico-military affairs, with the exception of matters relating to occupied areas and foreign military assistance. This office will keep the Secretary of Defense and other NME officials advised on the status of politico-military matters. It will assign responsibility for particular problems in the politico-military field to appropriate NME departments and agencies, will coordinate planning with respect to politico-military affairs, will supervise and coordinate the execution of approved military policies of the National Security Council, and will assist the Secretary of Defense in coordinating NME activities in this field with those of the National Security Council, the Department of State, and other government agencies.

Assistant Secretary of the Army Tracy S. Voorhees will continue to handle all policy matters affecting occupied areas, while Major General L. L. Lemnitzer, U. S. Army will continue to perform functions with respect to foreign military assistance.

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Civil Affairs Staffs Participate In European Command Maneuvers

The following account covers the part played by Civil Affairs Division staffs during "Exercise Harvest" in the European Command.

Civil Affairs Division personnel formed part of the joint maneuver staff during "Exercise Harvest," the fall maneuvers of the Army, Navy and Air Force in the European Command which took place September 6 to 17. Plans were made for the Civil Affairs Staff Section to go through the procedure of assuming control over local governments of specific towns and population centers in the maneuver area.

The CAD Section of joint maneuver headquarters coordinated activities of Civil Affairs staffs on both sides of the maneuvering forces, down to battalion level.

Civil Affairs military government field teams were activated by commands of U. S. Aggressor forces for assumed tactical duties. Normal functions of Civil Affairs staffs include maintenance of law and order through liberated, friendly government agencies and the civilian police force. The staffs also provide for fire fighting facilities, attack warnings and shelter. They are responsible also for collection of supplies and rationing, as well as for disease control measures.

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U. S. Joint Umpire Command Rates Effectiveness of Maneuvers in Europe

Umpiring "Exercise Harvest," the joint exercise of U. S. Army, Navy and Air Force units which took place in Germany September 6 to 17, was one of the major tasks to be performed in the large-scale maneuvers.

A joint umpire command, composed of representatives of the Army, Navy and Air Force was for the first time organized at European Command headquarters in Heidelberg, under the direction of Brigadier General Philip E. Gallagher of Council Bluffs, Iowa, Director of Posts in the European Command. Colonel Burns Beall of Richmond, Virginia, was the Deputy Chief Army Umpire; Captain Noble Abrahams, USN, of Houston, Texas, was the Deputy Naval Umpire; and Colonel Willard R. Wolfinbarger, of San Antonio, Texas, Director of Plans, USAFE, was Deputy Air Umpire. The final report, critique and briefing action was in charge of Colonel Russell F. Albert of Elizabethtown, Kentucky, of the EUCOM Historical Division.

Most of the unit umpires came from the Second Armored Cavalry Regiment.

As in a baseball game, the umpire must decide the effectiveness of the participants' performance, rule out illegal action, and call the plays as he sees them. The umpire of a troop training exercise must also be technically and tactically qualified to judge whether a unit actually has or has not accomplished its assigned mission. He must judge the effect of fire power, both ground and air, and assess delays and casualties in personnel and material accordingly. This includes the fire of all weapons used by the opposing infantry, artillery, armor and air. He assesses delays caused by obstacles and must be ready to stop troops short of physical contact and hand-to-hand combat, as troop rivalry is at high pitch during field exercises. The umpires also may add realism to the maneuvers by introducing "simulator" or placed explosive charges, artillery, and mortar fire simulating battle noises through the use of specially prepared sound recordings.

In "one-sided" combat training exercises the troops act against a represented, or "paper," enemy which is usually outlined by the umpire as being in theoretical strength and operating tactically along specified lines. The troops demonstrate their tactical skill by proceeding against this imaginary force. The umpire controls the action and judges the strength and weakness of the performance.

NEW FIELD FORCES CHIEF

General Mark W. Clark, Commanding General of Sixth Army with Headquarters at the Presidio at San Francisco, will succeed General Jacob L. Devers as Chief, Army Field Forces, at Fort Monroe, Virginia, on September 30, the Department of the Army announced recently.

General Clark, a native of Madison Barracks, New York, won prominence during World War II for the part he played in planning the invasion of North Africa. A month before the actual invasion, he made a dramatic and hazardous trip by plane and submarine from London to French North Africa for a secret rendezvous with a group of French officers to arrange details for the proposed landings. As Deputy Commander in Chief of the Anglo-American invasion forces he flew from Gibraltar to Algiers on the day following the landings, November 9, 1942, where he took into protective custody Admiral Jean Francois Darlan, Commander in Chief of all French forces in northwest and west Africa.

In January, 1943, General Clark was named Commanding General of the Fifth Army and in September of the same year directed that unit in the landings at Salerno, Italy. Under General Clark, the Fifth Army entered Rome on June 4, 1944, the first Axis capital to be liberated from the enemy. In December, 1944, General Clark was elevated to the Command of the Fifteenth Army Group, comprising all fighting forces in Italy. He held that command until the close of hostilities in Europe. He assumed command of the Sixth Army on June 19, 1947.

In "Exercise Harvest," however, the participants were divided into opposing teams which employed all their tactical knowledge, ability, technique and equipment to try to outmaneuver the other team. Each group acted as it chose, subject only to field orders, terrain restrictions and action of the opposing forces. Maneuvers continued until the tactical action had developed fully and indirect as well as direct results could be foreseen and evaluated.

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NME Assistant for Civil Defense Liaison Appointed by Secretary of Defense Johnson

Establishment of the position of Assistant for Civil Defense Liaison in the Office of the Secretary of Defense was recently announced by Secretary Louis Johnson, together with the appointment of Lieutenant Colonel Barnet W. Beers to this position.

The creation of this new staff position, Secretary Johnson said, results primarily from the necessity of assuring effective coordination of NME activities which are closely related to civil defense with the activities of those civilian government agencies which have been made responsible for civil defense planning as such. The ultimate objective is to make certain that planning and preparations for civil defense are properly related to planning and preparations for military defense, and that each complements the other.

Colonel Beers had been Executive Assistant in the NME Office of Civil Defense Planning since it was established on March 27, 1948. This office was abolished and its files and remaining personnel transferred to the Assistant for Civil Defense Liaison.

The Assistant for Civil Defense Liaison in Secretary Johnson's office will work closely with the National Security Resources Board to which President Truman recently assigned direction of the nation's civil defense planning, and with the Federal Works Agency to which the Board has in turn delegated important functions in this field.

An important part of the work of the Assistant for Civil Defense Liaison will be the development, in conjunction with the NSRB and other agencies of government of clear-cut lines of responsibility for the various aspects of civil defense planning as they are related to NME planning and activities. He is also charged with responsibility for establishing procedures within the NME for correlation and resolution of joint problems with cooperating agencies.

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New Metallic Compound Developed for Use in High Temperature Engines

A new metallic compound which will withstand the high temperatures of modern gas turbines, jet and rocket engines, has been developed under an Office of Naval Research contract with the American Metals Corporation, Yonkers, New York.

The compounding process, using zirconium and boron, provides an alloy which, in recent tests, survived the highest temperature blasts of any materials extensively tested to date.

Zirconium, one of the two elements combined in this process, has previously found important uses in the ceramics industry and in the making of copper alloy, ammunition primers, wire for radio tubes, and welding rods. The chief source of zirconium is the mineral baddeleyite, which comes from Brazil.

Boron, the other element of the new compound, originates as boracic acid in the volcanic craters of Nevada, California, and certain islands of the Mediterranean. The common household borax and various boric medications are derived from the same material.

The zirconium-boride compound, developed in research experiments directed by P. Schwartzkopf and S. J. Sindeband, will undergo further tests and evaluation of potential uses.

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Army Announces Plans for the Release of non-Regular Officers

Details concerning the release prior to April 1, 1950, of 3,387 Army Reserve Officers now on active duty were announced recently by the Department of the Army after Secretary of Defense Louis Johnson put into effect an economy program for all three services designed to reduce expenditures for national defense.

Under the Army's plan 1,250 of the 3,387 officers will be released by December 31, 1949, and the remainder will revert to inactive status by April 1, 1950.

All officers will be given at least three months' notice prior to their release. Those officers serving in the United States who are chosen for release will be frozen in current assignments and those serving in overseas areas will be returned to this country prior to their release date.

Selections for release will be made from all non-Regular officers now on duty with the Army.

Selection of the group of officers to be released by December 31, 1949, will be made directly by Commanding Generals of the six armies in the United States and by commanders of overseas areas. Selection of the reserve officers to be released by April 1, 1950, will be made by the Department of the Army from officers recommended for release by Army and overseas commanders.

? ? ARE YOU WELL INFORMED ? ?

1. Ten years ago this month Hitler launched World War II with his Invasion of Poland. Today, four years after the end of that war, the Allies have concluded peace treaties with five nations. Three remain to be written Name the eight countries and their peace treaty status.
2. Which of the following posts carry full cabinet rank; Secretary of Defense, Secretary of the Army, Secretary of the Navy, Secretary of Air?
3. He assumed the post of High Commissioner for Germany, succeeding General Clay in the changeover from military to civilian control. His name?
4. It has been estimated that (a) 5,000,000 (b) 13,000,000 (c) 22,000,000 (d) 44,000,000 soldiers, sailors, airmen and civilians were killed in World War II. Select the approximate figure.
5. "Of the Japanese people I can pay no higher tribute than to repeat that they have fully and faithfully fulfilled their surrender commitments and have well earned the freedom and dignity and opportunity which alone can come with the restoration of formal peace." Who made this statement on what occasion?
6. The words of Edvard Kardelj, Ales Bebler and Milovan Djilas will be watched with great attention during the coming weeks. Why?
7. The recently passed amendment to the National Security Act of 1947 created a new post in the structure of the top military command. What is the position and who was named to fill it?
8. The end of September will see a change in the top Field Forces command. Name the principals.
9. The cities of Bonn and Strasbourg have been much in the news recently. Why?
10. The Joint Chiefs of Staff recently visited Europe to secure a firsthand idea of military needs for implementing the North Atlantic Security Pact. The U. S., Britain, France and the Benelux countries comprise half of the member nations in the Pact. Name the other six nations.
11. The Chinese Civil War is drawing attention to two important points, Hong Kong and Macao. Why?
12. The U. S. has just authorized a $20 million loan to this country as part of a program recognized by the State Department as a calculated risk. What is the country?

Answers on page 61

ARMORED BREAKTHROUGH

by LIEUTENANT COLONEL GEORGE B. PICKETT, JR.

As we see things today, a small, well trained, excellently equipped, highly mobile force is the answer to preparedness without bankruptcy. The inherent characteristics of such a force must be those of our Arm—Mobility, Fire Power, Shock Action. These are the ingredients for armored breakthrough. Here is a study of the elements involved in this type of operation, which is fundamental with the "Breakthrough Arm."

AT the beginning of World War II, any armored breakthrough, even on a small front, frequently led to a breakdown of the entire enemy defense system. There has always been an adage among soldiers that "For every Hannibal there must be a Varro." This philosophy can be carried one step further and we can say that for every successful armored breakthrough a definite set of circumstances must exist. These circumstances we refer to as factors to be considered in planning the operation. From the outset it should be understood that these are only factors to be considered in planning and not potential excuses for failure to achieve success. After considering these factors it may appear that the operation can be regarded as a routine armored breakthrough or that certain adverse conditions exist which require special measures to be taken. For example, the Ardennes breakthrough in December 1944 was planned and executed by Hitler in spite of Allied air supremacy. The special measure taken to nullify this condition was to rely on adverse weather to ground the Allied Air Force. The unreliability of this "special measure" in the form of good flying weather around Christmas 1944 was one cause of the failure of his armored breakthrough.

A DOCTRINE ARTICLE

Factors to be Considered in Planning

Any planning of armored breakthrough operations subdivides into a consideration of six factors:

Relative armored strength of the opposing forces.
Location and strength of the enemy's mobile forces.
Nature of the enemy defense.
Air superiority.
Artillery superiority.
Terrain and weather conditions in the area of the breakthrough.

Relative Armored Strength of the Opposing Forces

As in all military operations, an armored breakthrough requires a superiority of force, in this case armored, throughout the battle area. Careful consideration is given to all of the enemy's armor in the theater of operations. These units are capable of intervening within 24 hours in a battle which is being fought 180 miles away. The attack of the 4th US Armored Division to relieve Bastogne in December 1944 illustrates this point most vividly. In computing the enemy's armored strength capable of intervening, the full marching capability of the enemy armored units is considered. Active measures are taken to

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Lt. Col. George B. Pickett, Jr., served in the 11th Armored Division during the war. He is an instructor in the Department of Tactics at The Infantry School, Fort Benning, Georgia.

isolate the breakthrough area to prevent large scale transfers of enemy armor from another area. For example, the Germans were able to withdraw the 5th and 6th Panzer Armies from the Western Front and launch a full scale counterattack at Balaton in Hungary in less than two weeks.

It must also be realized that armor-versus-armor battles sometimes decide the success of the breakthrough. The defeat of the German armor at Kostelnikovo in December 1942 sealed the doom of the 6th German Army at Stalingrad. According to German claims, the Wehrmacht never achieved armored equality on the Eastern Front. Even their successes in 1941 and 1942 were made against numerically superior armored elements. The defeat of the German armor at Prochorovka on the 8th and 9th of July 1943 was caused by a strong superiority of the Russians in armor.

The counterattacks by the First and Third US Armies to close the gap at Houffalize and pinch off the Germans in the Bulge were made possible by a decided superiority in armor by the Americans. It is now evident that the Germans attempted the Ardennes gamble with less than 600 tanks. The American counterattacks contained over 2200 tanks in the Armored Divisions alone.

Location and Strength of the Enemy's Mobile Forces

The location and strength of the enemy's mass of maneuver is always determined. During the critical days of May 1940 the French Army had no mobile reserve with which to counterattack the flank of the German armored thrust from Sedan to Abbéville. Considered study of this operation indicates that a large mobile reserve in the vicinity of Paris on May 10th 1940 could in all probability have restored the ruptured front. The lack of this mobile reserve assured the success of Armored Group von Kleist.

But the French were not the only Army caught without a mobile reserve. When the Germans launched their Ardennes counteroffensive, SHAEF had two divisions in mobile reserve, *accidentally*. The 82d and 101st Airborne Divisions were *recuperating* in the Soissons-Rheims area. Their presence enabled Bastogne to be defended and the Ambleve River line to be held. The US 11th Armored Division was in the United Kingdom on 14th December. By Christmas, it was fighting in the Bulge area.

The Germans had no mobile reserve to block Patton's march to the Rhine north and south of the Moselle in March 1945. The 5th and 6th Panzer Armies, their last mobile reserve, had been shifted to Hungary during the preceding month. Once the front was penetrated, no German forces had sufficient mobility to cope with the American armor.

Nature of the Enemy Defenses

The enemy may employ two types of defense. A mobile defense in depth or a defense of a fortified line. The Germans had found from experience in 1940 in France, and 1941 and 1942 in Russia that any breakthrough, even on a small scale, led to a collapse of the enemy front. The success of these penetrations was due to two factors: lack of defense in depth, and the inability of the enemy to supply their forces on the front line while the German armor overran their supply lines.

The Battle of France proved the inability of a linear defense, even employing fixed fortifications, to combat armored breakthrough tactics. The thinly held front lines were quickly penetrated permitting almost free maneuver for the armor. The armor drove a wedge to the sea cutting off large segments of the Franco-British Armies. However even those segments which were not cut off fell back in confusion for the advancing armor destroyed their communications. Concerted action became impossible. The same system was employed against the Germans by the Allied armor following the St. Lo breakthrough in July 1944.

However the "blitz grinding" capability of mobile defense proved its worth during the Battle of Kursk. For two consecutive summers the German Armor had swept the Russians before it. The old familiar armored tactics which had been so successful in 1940, 1941, and 1942 were attempted by the Germans once again in July 1943. However, the Russian units which were grouped on the sides of the breakthrough points did not abandon their positions, even when attacked in the flank and rear. The narrow wedges which the Germans succeeded in driving into the Russian positions in a few places became the object of Russian counterattacks on their flanks and were cut off. The Germans were unable to widen the gaps made in the Russian positions and consequently never succeeded in securing operational maneuver room for their armored forces in the Russian rear areas.

The basic difference from previous Allied defensive efforts was the tremendous depth of the Russian defense area at Kursk. The defense had a depth of more than sixty-five miles in certain directions and consisted of defensive sectors and strong points. These strong points split up the attacking German forces and hindered their maneuver. Although the Russians had large reserves at their disposal, they did not attempt to institute a very strong defense over the entire length of the Kursk salient, but concentrated their efforts on the attacker. At no time were small local reserves dissipated in automatic counterattacks merely to restore an imaginary "main line of resistance." The defensive depth was fostered by employing the front line elements to man observation posts and an outpost system, defending key terrain; and employing the bulk of their forces in counterattacks. These counterattacks were not designed to restore a ruptured line but to seize the initiative from the enemy and destroy him. These principles were later employed with outstanding success by the 7th US Armored Division at St. Vith in December 1944 against the main effort of the 5th Panzer Army.

Armor has superior mobility on the battlefield. Attacking armor must be met with equal mobility. One hostile force defending against another force of equal mobility must outmaneuver it. An armored force which does not maneuver has no chance of success. However, maximum use is made of tanks which have been dug in and camouflaged in carefully selected areas inside infantry positions. These tanks are in position to take the enemy under fire at the maximum effective range, thereby breaking up his formations and enabling mobile armored forces to outmaneuver him. For armor, like all combat arms, employs fire and maneuver.

Air Superiority

Air supremacy over the breakthrough area is essential to success. Column cover must be provided for the advancing armored columns if only local air superiority is obtained. When overwhelming air superiority throughout the theater has been gained, incidental or no column cover is required. Air forces assist the armored breakthrough by:

Protecting the armored columns from interference by hostile air.

Bombing and strafing objectives beyond the reach of supporting artillery.

Resupplying isolated units or providing aerial resupply for the operation.

The value of air superiority during the breakthrough cannot be overemphasized. Without adequate column cover, armored formations can move only at night. With the advent of night vision devices, even night movement in the face of enemy air superiority is extremely hazardous. During the armored breakthrough across Northern France, the American armor could move freely around the clock; but German armor could move only under cover of darkness. The value of air resupply to isolated forces cut off bv armored penetrations was aptly illustrated by the action of the Luftwaffe at Stalingrad and the U.S.A.F. at Bastogne.

Air superiority also permits the employment of parachute and glider borne forces to assist the armored forces by seizing key bridges and defiles, blocking the movement of enemy reserves, and disrupting key communication centers. This cooperation and coordination of the armored-airborne team is essential for success in future breakthrough operations.

Artillery Superiority

During World War I, Infantry became known as the "Queen of Battle." If this is true then Artillery can accurately be termed the "King of Battle"; and Armor the "Iron Knights of the Battlefield." Napoleon made the observation "Providence is most frequently on the side with the heaviest guns." The results of World War II certainly indicate the truth of his remark. The U. S. Army employed massed fires through a central fire direction center. This method enabled the Americans to concentrate 45 battalions on a front the width of a battalion during one action in Italy in 1944.

Massed artillery is an axiom with the Russians. In the artillery preparation preceding the breakthrough at Stalingrad, the Russians massed flat trajectory fire on the German positions for two hours, after which they shelled the positions with mortars for another two hours. These tactics had the effect of running the Germans into the defiladed areas where they assembled for protection against the flat trajectory fire; and then shelling the defiladed areas with mortars to neutralize the enemy who survived the artillery barrage. Massed artillery fire can force armored formations to deploy, it can damage the tracks and suspension systems of the armored vehicles, and it can separate the tanks from their accompanying infantry. The heavier calibers may even knock out individual tanks. VT or similar fuzed projectiles may prevent armored infantry from being able to dismount for close combat. Artillery superiority is definitely required in the breakthrough area. Enemy reserve artillery or mobile artillery which can be moved quickly to the threatened area is considered in planning.

Terrain and Weather Conditions

In the employment of armor, careful consideration of the terrain frequently makes the difference between success or failure. Some types of terrain favor the employment of armor while other types restrict their use. Armor operates most effectively over rolling terrain where the full cross-country mobility of the vehicles can be used. Swamps, unfordable streams, dense woods, heavily eroded terrain, steep slopes, and vegetation which limits visibility are all factors which restrict armored vehicles.

Weather is another factor which affects armor. Rain often renders otherwise good tank terrain so boggy that armored vehicles are restricted to roads. However, full track vehicles can frequently move over ground covered by deep snow where other vehicles cannot. Ice makes roads and slopes slippery. Extreme heat and humidity reduce the efficiency of personnel in armored vehicles and cause excessive track wear and engine heating. Even though adverse weather conditions make the successful employment of armored vehicles difficult, they may be used under these conditions to secure surprise.

The terrain in the breakthrough area should be favorable for tank employment. Adequate road nets are required for the support of the operation. The enemy will mine and defend favorable tank terrain. Frequently an attack over less favorable terrain, preceded by a little pioneer work and the use of field expedients, may achieve surprise and obtain success. If the initial attack is launched through this type of terrain, the armored columns should debouch on favorable terrain. The feasibility of such attacks is well illustrated by the German successes in attacking through the Ardennes both in 1940 and in 1944.

Tactical Employment

The initial tactics during a breakthrough operation are designed to accomplish one purpose: SECURE OPERATIONAL MANEUVER ROOM FOR ARMOR IN THE ENEMY REAR AREAS. The armored breakthrough operation can be divided into two phases, the penetration and the exploitation.

The Penetration Phase

The penetration may be made by either armored or infantry divisions or a combination of armored and infantry divisions. However the divisions to be used in the initiation of the exploitation should not be committed in the penetration phase. There are generally three impulses to the penetration:

The breakthrough of the enemy position.
Widening the gap.
The exploitation of the gap.

For breaking through strong and very deeply organized positions, a method requiring a slow and methodical advance in which each stage is prepared by means of several hours of continuous artillery and air bombardment is employed. Powerful artillery support is ready at all times to check enemy counterattacks. The exploiting force should be poised and ready to move the instant that the rupture occurs. Other forces are employed to hold the breach open until the decisive effect of the rapidly moving and destructive armor can take effect in the enemy's rear areas.

The Exploitation Phase

When a breach has been made in the enemy's battle position, further offensive operations become an exploitation. The exploitation phase is characterized by rapid advances against discontinuous resistance, frequent attacks from march column, by-passing or enveloping strong centers of resistance, and the possibility of engaging the enemy's armor reserve which he may be expected to commit to destroy the exploiting forces. The object of exploitation is to reach the assigned objective as rapidly as possible and hold it until relieved by follow-up units. Pursuit is part of the exploitation. A force that is exploiting may be assigned the mission of pursuing and destroying a specific enemy force. Armor is included in both the direct pressure force and the encircling force.

The exploiting force is assigned a key strategic objective deep in the enemy rear area. This objective should be deep enough to cause a large upheaval of the entire enemy defense system. The objective assigned the exploiting armor must assure a strategic success, not merely achieve a tactical victory. Specifically, the classic "wedge and trap" maneuver which the Germans made famous in 1941 and 1942 in Russia must be weighed against the rapid advance straight into the enemy's vital areas. The Germans employed the direct plunge into the heart of the enemy in 1940, and France fell in four weeks. They captured tremendous numbers of prisoners by classical encirclement in 1941 and 1942; but did not achieve a decisive success.

Armor achieves speed on exploitation by: the proper use of roads, by-passing strong points, frequent changes of direction, attacking from march column, aggressive commanders, and efficient control. The armor on exploitation normally advances in column on roads. Cross-country formations are assumed only when the use of roads is denied by enemy action and when terrain requires such formations. Much time can be saved in by-passing isolated strongpoints for more profitable objectives. As the advance continues, frequent changes in direction are made to confuse the enemy with respect to the axis of advance. Also, speed is gained by attacking directly from march column. This attack is possible only if units are arranged in the column in the order of anticipated employment. Speed is further facilitated by aggressiveness of commanders with the attributes of courage, initiative, boldness, alertness, force, and enthusiasm.

Exploitation Under Adverse Terrain and Weather Conditions

It may be necessary for armor to be employed on breakthrough and exploitation missions in areas unsuitable for armored operations. Large areas of the world are covered by great virgin forests, widespread swamps, erosion, poor roads or no roads, and bridges not strong enough to bear the weight of tanks, armored carriers, and other heavy equipment. There also exist large land masses, having a few poor or no roads at all, that are favorable for tank employment in dry weather; but which become impassable seas of mud in the rainy season. An armored unit commander on exploitation in such an area must consider the following:

Supply and Evacuation Transport

Full track vehicles have cross-country mobility, even under adverse conditions, far superior to wheeled and half-track vehicles. In order to assure that combat trains and medical vehicles can keep up with the fighting elements, these units are re-equipped with full track cargo and evacuation vehicles. This may require special training in this new equipment for these units prior to the operation.

Self-Sufficient Combat Units

Each armored unit carries sufficient fuel, lubricants, ammunition, rations, and water to enable it to reach its objective. If this is not possible, the higher headquarters carries these supplies and makes them available to the units. This frequently requires supplementation by air transported supply, either dropped in parachute containers or landed at forward air strips established by the advancing armor.

Exploitation at Night

Surprise may be attained by a bold night move deep into the enemy rear area and complete camouflaging of units prior to daylight. A series of these bold moves, if undetected by the enemy, puts the exploiting force deep in the enemy's rear before active daylight operations are undertaken. Such actions are feasible in situations where the opposing forces hold extremely wide fronts, especially in very wooded and undeveloped areas.

Lack of Accurate Maps and Topographical Information

When fighting in trackless wastes and undeveloped areas, accurate maps are seldom available. Information shown on existing maps may be inaccurate and in many cases may indicate contemplated roads and developments as actually existing, when they do not. Streams and hill masses which vitally affect the operation may not show on the existing maps. When fighting in these areas only recent aerial photomaps and photographs, accurately interpreted, should be relied upon. It is the responsibility of the higher commander to provide accurate maps or map substitutes to his subordinates. Frequently these maps or map substitutes may be in limited supply requiring sketches and other improvisation to be made by the armored commander and his staff.

Infantry Follow Up

The exploiting armor is prepared to defend its gains for considerable periods awaiting the follow up troops which do not have the mobility to advance at the same rate of the exploiting force. In some situations it may be necessary for follow up troops to be air lifted to landing fields and air strips seized by the exploiting force to help defend a critical objective that has been seized until the less mobile ground follow up arrives.

Field Expedients

Success is obtained in such operations only if field expedients and the initiative of small unit leaders to improvise means of advancing their vehicles through the bog, sand, and broken terrain are exploited to the utmost. Training in field expedients is vital. However the individual must not be indoctrinated that improvised methods, developed on the scene, are not equally as good. The detailed training in accepted methods must not stifle the very essential initiative of all squad leaders and vehicle commanders.

Aggressive Leadership and Initiative

Only aggressive commanders with a high degree of initiative achieve success in this type of action. Commanders who can operate only under detailed orders and instructions, and strict adherents to only pre-tested methods, jeopardize success. The attributes of a successful commander for exploitation in difficult terrain are resourcefulness, initiative, boundless energy, determination, and enthusiasm. A flair for doing the unexpected is also a definite advantage in fighting an enemy that adheres to rigid rules; and an enemy who must have his plans approved by a series of superiors before they can be executed.

Training

An armored unit which is to be committed to an exploitation mission under adverse terrain and weather conditions should receive intensive field maneuvers in areas similar to the area of the contemplated operation. Small unit SOP's (standing operating procedures) are developed, training in field expedients is stressed, driving under the expected conditions is emphasized, and all personnel are indoctrinated in the factors which must be considered in the area of actual operations. A phase of field problems under the most adverse conditions possible in the training area should be held to enable procedures to be developed and to demonstrate forcefully to all individuals the means of overcoming the adversities.

Summary

The Germans conceived the armored breakthrough as a means of overcoming the two factors which had caused their defeat in World War I:

> Numerical superiority of the enemy in personnel.
> *Potentially* greater enemy industrial output.

In many ways the United States faces a problem similar to the one which faced Germany in September 1939; i.e. at present the U. S. has the *developed* capacity to out-produce any logical group of enemies, but these enemies have the *undeveloped* capacity to far exceed this U. S. industrial production. Also, the logical group of enemy has overwhelming personnel superiority. The U. S. must develop means of insuring a speedy victory in any possible future war before the enemy industrial potential can be developed and before their manpower advantage can wear us down in a war of attrition. The armored breakthrough is not the solution to all of these problems; but it does provide us with a means of securing a speedy success on a large scale. We must not look *backward* at World War II as being the final answer to the armored breakthrough. Better techniques and better machines must be available in the future to enable a small highly mobile army to defeat *quickly* a large, massed personnel army having inferior mobility, firepower, and shock action.

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GUADALCANAL: FIRST STEP ON THE LONG ROAD BACK!

GUADALCANAL: THE FIRST OFFENSIVE. From the series U. S. Army in World II. By John Miller, Jr., Historical Division, U.S. Army. Government Printing Office. 413 pp. $4.00.

A Review By
FLETCHER PRATT

The first thing to realize about this volume is that it is an official history. No one in it ever speaks; the sounds of battle are dumb, there is neither odor nor anger (save once, when "some bitterness resulted") nor argument. The factor of personality, which actually counts so prodigiously in war, is never mentioned.

Thus there is no hint of the lifting of spirits among the hard-pressed men on Guadalcanal when the news came in that Halsey had taken command; or of the almost pathetic gratitude with which the men in the boondocks brought out their last treasured chocolate bars for survivors of the ships that went down while saving everything in the great November sea fight. No one will ever learn from this book that Colonel Akinosuka Oka was an anomaly among Japanese—a giant, a politician and a coward—or that his character played a key part in the failure of two offensives. The singular command methods of Evans Carlson are not discussed.

Yet to protest that history without the personal element gives a refracted picture is to neglect the adjective in the phrase "official history." Somebody has to get the physical facts straight, and an official historian who presents judgments so soon after the event would inevitably lie under the imputation of offering personal rather than institutional opinion. Mr. Miller tells us fairly enough that the Second Battalion failed to make significant gains and its commander was relieved the following morning, whereupon the attack was pressed forward more successfully. The job of deciding what physical and mental reactions lay behind the failure and the success is one for the future historian who treats this as a point of departure.

To be sure, some fault can be found even on the level the author has chosen, or has had imposed upon him. There is no mention of the perplexing problem offered by the Japanese device of reinforcing and evacuating by means of large groups of destroyers operating at night, or of the U.S. Navy's failure to solve the problem in the action off Tassafaronga—though it was very important to the enemy's logistics and therefore a distinct element in the campaign. The effect of Japanese air bombardment is hardly touched, especially in the later phases of the campaign, and we are left a good deal in the dark with regard to the effectiveness of American close air support on the offensive. More space and more detailed narrative are given to an Army battalion attack that killed 164 Japs than to a Marine regimental offensive at the same time, in which over 1,000 of the enemy perished.

Fletcher Pratt is one of the more able, popular and readable military historians of our day. A prolific writer, his most recent works include *Ordeal By Fire*, *The Empire and the Glory*, and *Eleven Generals*. He is author of *The Marines' War*, an outstanding account of the Pacific Campaigns.

U. S. Army

U. S. Army

Typical terrain and dispositions on Guadalcanal.

Most of this is the product of the fact that Mr. Miller is specifically writing the Army history of Guadalcanal, and he is entitled to foreshorten somewhat the parts played by the other services. Taken on its own terms GUADALCANAL is an excellent history, by far the best volume so far pushed in the gigantic project, and for care, detail and arrangement a book that will bear comparison with Professor Morison's on the navy in the war.

Within its domain as Army official history the work yields up several conclusions, which Mr. Miller carefully avoids drawing for the reader. Probably the most striking is with regard to the failure of both Japanese Intelligence and intelligence. Throughout the campaign both the enemy upper and lower commands operated in a dreamworld. They began by sending the Ichiki force, 1,000 strong, to oust 10,000 Marines from the island; they ended by planning to throw two divisions onto the beaches against 40,000 Americans, and actually brought the troops for this mad project to Rabaul before discovering that they did not have transports to take the men to Guadalcanal or airplanes to cover the movement.

Recent novelists have assured us that the American Army was led by cowards and fools, but not even in fiction have they been able to equal the sober fact of the Japanese performance. In fact, there is a slightly despairing note in a Japanese document quoted at the end of the book, which complains that the American movements are so very accurate as to offer no opportunities for counterstroke or flank attack.

The incidence of medical casualties is also very impressive. Up to December, 1942, the reinforced 1st Marine Division (really a small corps) suffered 10,615 casualties; 5,745 of them were from malaria, and the rate did not decrease. But among the enemy "probably every man was a victim. They had no systematic malaria control, no mosquito nets and inadequate field hospitals." To which Mr. Miller might have added, but has not, that by a peculiar fatality every ship carrying Japanese medical stores to Guadalcanal fell a victim to American guns or bombs.

In the later stages of the campaign the enemy were simply too physically weak for anything but the most passive defense. That defense was very dogged and although its details were often well thought out it was nothing like what might have been achieved by even semi-healthy men. In January, 1943, 600 fresh troops were landed to cover the evacuation; they promptly disjointed the swing of an American two-division movement by infiltration counterattacks.

In fact, Mr. Miller, by merely quoting the enemy document on American fighting methods and listing the numbers of Japanese who escaped the island during that January, manages to convey some fairly severe criticism of the slowness with which the movement from the original perimeter to Cape Esperance was carried forward. There was a good deal of reason why things did not go faster. The American supply situation was seldom good, many of the troops were having their first experience in jungle warfare and our intelligence as to the enemy order of battle was not very adequate. But it is still true that in war one can always find reasons for not doing things and the great achievements belong to officers who surmount difficulties.

U. S. Army

Viewing the front from an observation post on Guadalcanal—*L to R,* Sec'y of Navy Knox, Maj. Gen. Patch, Adm. Nimitz, Adm. Halsey, Maj. Gen. Collins, Col. Moore.

Above all, the importance of armor in jungle warfare stands out—about the last place one would expect to find it a ruling factor. Nobody imagined anything of the kind in the beginning. The Japs put no tanks ashore till they were preparing for the big attack at the end of October and no American mediums ever reached the island at all. But the need for something that could deliver heavy fire at short range was felt early and often. The 75 pack howitzer was too light; it was hard to obtain good observation for the 105 and 155; the shells of the 81mm mortar hit trees.

The real payoff came in the attack on a position called The Gifu, in a bowl on the slopes of Mt. Austen, consisting of mutually supporting pillboxes, deeply dug in and expertly camouflaged along the jungle floor. The 60mm mortar could do them no damage; the 81 was deflected by trees; and the positions were both defiladed from artillery fire and almost impossible to locate. The defense consisted of not much more than two companies, men without communications, tired, hungry and sick, yet they held off more than three battalion combat teams for six weeks, or until someone borrowed three light tanks from the Marines. Two of them broke down hopelessly in trying to reach the spot through almost impassable terrain, but when the third tank arrived, The Gifu was blown all apart in two days and with a minimum of casualties.

This is an example on the small scale of what the whole book tells on a large scale. There were fumblings, unnecessary casualties, slowness and officers relieved in this first American offensive. The Marines went in expecting to have eight days to unload supplies and nobody bothered to tell them that the ships would have to leave after three days. The intelligence was often poor; supplies were always low, especially engineer supplies.

But always and ever our forces were there in the pinch. The Japanese planes that might have made the situation intolerable were shot down, the Japanese battleships just about to wreck the whole operation were sunk by the U.S. Navy, the Japanese offensive just about to break into the perimeter encountered a wholly fresh and very savage regiment of the North Dakota National Guard; the Japanese tanks about to force their way across the mouth of the Matanikau encountered a wholly unexpected group of tank destroyers and were blown into the water.

U. S. Army

Japanese prisoners on Guadalcanal.

Perhaps each of these incidents had about it some feature of accident; and one may marvel at how lucky we were. But accident so many times repeated ceases to bear the accidental explanation, and no one can read this volume without a certain amount of pride in the manner in which American troops met every crisis to emerge victorious not by a hair's breadth, but a wide margin. At the end of the campaign American casualties were 1,600 killed, 4,245 wounded; Japanese stood at 24,800 besides some thousands drowned at sea, and they had lost the key island. Let us stand on that.

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SKILL, SWEAT AND SEAMANSHIP

Naval Salvage in North Africa

NO BANNERS, NO BUGLES. By Captain Edward Ellsberg, USNR. Dodd, Mead and Company. $4.00.

A Review By

LIEUTENANT COLONEL PAUL M. MORRILL

"Who Says It Can't Be Done?" This belligerent phrase was the ringing tocsin that put over one of our great Bond rallies during the "late hate." The phrase is Captain Ellsberg's—representing his attitude toward an "unsolvable" salvage problem in the Red Sea. Needless to say he solved the problem, and his reverberating phrase made a success of the Bond Drive. This same phrase is, moreover, an accurate capsule description of the man himself. To Ellsberg every problem has a solution. To quote the author—"there is always some way out, unconventional as it may seem. All that is necessary * * is a little imagination and no inhibitions." He might well have added that a thorough grounding in engineering, a lifetime of experience, and an attitude so well expressed in the opening phrase constitute a great help.

NO BANNERS, NO BUGLES is a sequel to his previous book UNDER THE RED SEA SUN. It covers the author's struggles with Naval salvage problems in North Africa from Thanksgiving Day, 1942 to Lincoln's Birthday, 1943. Captain Ellsberg as Principal Salvage Officer of the Allied Forces, served the command of Admiral of the Fleet Sir Andrew Cunningham. His orders were to survey the salvage problems in six of the key ports of North Africa and then to open these ports to the supply ships bringing men, supplies and equipment to the allied forces locked in combat with Rommel and Von Arnim. Open these ports that were full of sunken ships and other marine equipment. Open them under the air attacks that sunk ships faster than they could be raised. Open them while German submarines lurked offshore to torpedo and sink incoming vessels. Open them with little equipment and fewer men. Open them in spite of red tape and political intrigue.

This, then, is the story of Captain Ellsberg's efforts. In ten short weeks he accomplished every task. A swift enumeration of his activities gives some idea of the tremendous energy of the man. He saved the torpedoed and sinking British destroyer *Porcupine;* fought the fire on the burning troop ship *Strathallen;* raised the *Spahi* which had been scuttled in the entrance to Oran; solved the problem of sailing the *Scythia* out of Algiers with a sixty- by twenty-five-foot hole in her side; got the transport *Cameronia* out of Bone with a hole in her stern and her

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Colonel Morrill is Executive Officer of the Cavalry Section, Career Management Group, Personnel and Administration Division, General Staff, U. S. Army. He was Executive Officer to Captain Ellsberg in the operation of a Naval Base and in extensive salvage operations in the Red Sea during the period immediately preceding the episodes covered in this book. He is a frequent contributor to the Armored Cavalry Journal.

shaft turning in salt water instead of the customary oil; brought in the mighty transport *Empress of Australia* after a collision at sea had ripped her open; raised a 25,000-ton floating drydock which had been scuttled in Oran harbor; struggled to get the attack transport *Thomas Stone* off the beach at Algiers; raised a smaller floating drydock after first disposing of a submarine which had been in it when scuttled; and saved the British cruiser *Pozarica,* whose captain and crew had abandoned her at sea as a total loss after a Nazi torpedo had taken off her stern. All in all, a good ten weeks' work.

There are passages in this book that will illuminate some of the less known episodes in North Africa. There is a beautifully written account of the abortive assault on Oran by the 3rd Battalion of the 6th Armored Infantry —of the great number who died before ever reaching shore, and of the survivors who languished in French jails until liberated by other elements of the 1st Armored Division. There is an amusing account of the capture of a submarine crew—complete from Captain to cook—by a much bewildered Infantry Company, twenty miles inland from the sea. There is the story of the assault troops who embarked for their landing operation 150 miles at sea, and made it, too. There are tales of incredible bravery, incredible cowardice, incredible stupidity and incredible resourcefulness. This book is history, not fiction, and the author calls them as he sees them.

This is not a "good" book. Captain Ellsberg throws few bouquets and many brickbats. It is the story of *men; men* fighting the enemy and the sea, occasionally fighting their allies and their sister services. It is the story of what *men* can do with little more than guts, know-how and sweat. "The man who won't be licked, can't be licked!" It is a chapter torn from the souls of the men who dared to do the impossible. Dared to do it in the darkness. Dared to do it in the bowels of torpedoed and abandoned ships. Dared to do it on the flaming decks of the burning *Strathallen* while the fire set off her unmanned guns. Dared to do it in the murk of the bottom of the sea. Dared to do it where there were no banners, and no bugles!

Answers to ARE YOU WELL INFORMED?

1. Treaties with Finland, Italy, Bulgaria, Rumania and Hungary have been completed. Those with Austria, Germany and Japan remain to be written.
2. The Secretary of Defense is the only cabinet rank position. The recent amendment places the three service departments under the Defense Secretary.
3. John J. McCloy is our new High Commissioner to Germany.
4. (c) 22,000,000.
5. General Douglas MacArthur, Allied Supreme Commander Pacific in a statement released on the fourth anniversary of VJ Day.
6. It is indicated that all three will represent Jugoslavia at the forthcoming U. N. Assembly meeting, where the current Cominform family squabble may well be aired.
7. Chairman of the Joint Chiefs of Staff General Omar N. Bradley.
8. General Jacob L. Devers retires to be succeeded by General Mark W. Clark.
9. The Parliament of the new German Federal Republic has begun its sessions at Bonn. Strasbourg is the scene of the first sitting of the Council of Europe.
10. Canada, Denmark, Iceland, Italy, Norway and Portugal.
11. There is much speculation as to the reaction to Communist advances toward British-controlled Hong Kong and Portuguese-controlled Macao.
12. Tito's Jugoslavia.

The Best Sellers

With the kind permission of The New York Times Book Review, *here is an analysis based on reports from leading book sellers in 36 cities, showing the sales rating of 16 leading fiction and general titles.*

Fiction

Sept. 4	Sept. 11	Sept. 18	Sept. 25	
6	2	1	**1**	A Rage to Live. *O'Hara*
3	3	2	**2**	Let Love Come Last. *Caldwell*
	7	3	**3**	The Egyptian. *Waltari*
4	1	4	**4**	Twilight on the Floods. *Steen*
1	5	6	**5**	Point of No Return. *Marquand*
2	4	5	**6**	Father of the Bride. *Streeter*
5	6	7	**7**	Nineteen Eighty-Four. *Orwell*
8	9	9	**8**	The Big Fisherman. *Douglas*
10	10	8	**9**	The Mudlark. *Bonnet*
7	8	10	**10**	Pride's Castle. *Yerby*
	16	14	**11**	Rest and Be Thankful. *MacInnes*
		13	**12**	The Big Wheel. *Brooks*
9	12		**13**	O Shepherd, Speak! *Sinclair*
12	14	11	**14**	The Brave Bulls. *Lea*
14	13	15	**15**	The Old Bank House. *Thirkell*
			16	The Golden Apples. *Welty*

General

Sept. 4	Sept. 11	Sept. 18	Sept. 25	
1	1	1	**1**	White Collar Zoo. *Barnes*
2	3	3	**2**	The Seven Storey Mountain. *Merton*
3	2	2	**3**	Cheaper by the Dozen. *Gilbreth and Carey*
4	4	4	**4**	Peace of Soul. *Sheen*
5	5	7	**5**	A Guide to Confident Living. *Peale*
6	6	8	**6**	Lead, Kindly Light. *Sheean*
10	9	10	**7**	The Mature Mind. *Overstreet*
	14	5	**8**	The Aspirin Age, 1919-1941. *Leighton*
9	8	6	**9**	American Freedom and Catholic Power.
8	10	12	**10**	The Greatest Story Ever Told. *Oursler*
7	7	9	**11**	Behind the Curtain. *Gunther*
			12	Women Are Here to Stay. *Rogers*
12	13	14	**13**	Peace of Mind. *Liebman*
11	11	13	**14**	With a Feather on My Nose. *Burke*
		16	**15**	Alcatraz Island Prison. *Johnston*
			16	The Jungle Is Neutral. *Chapman*

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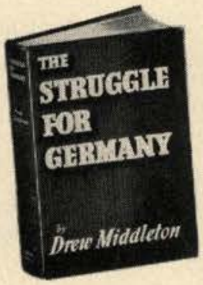

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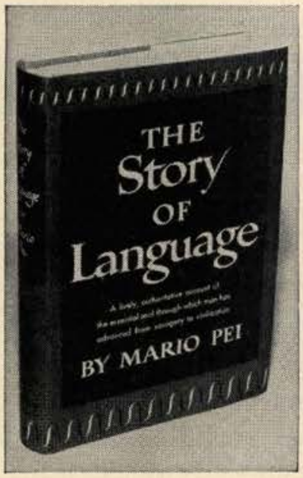

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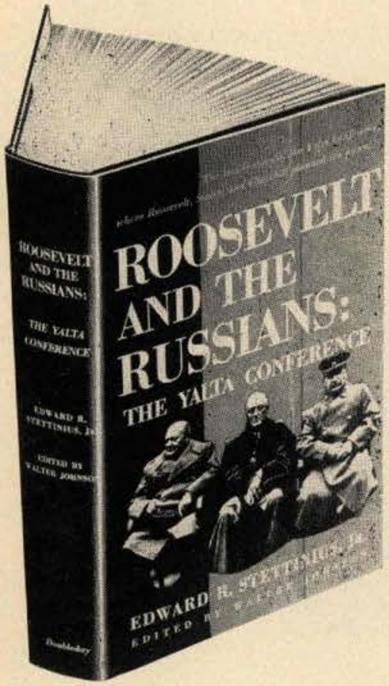
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President Truman signs Security Act Amendments as top civilian and military leaders look on. From Colonial times, step by step our country has evolved the legislative-military pattern so effective today. (See Page 18)

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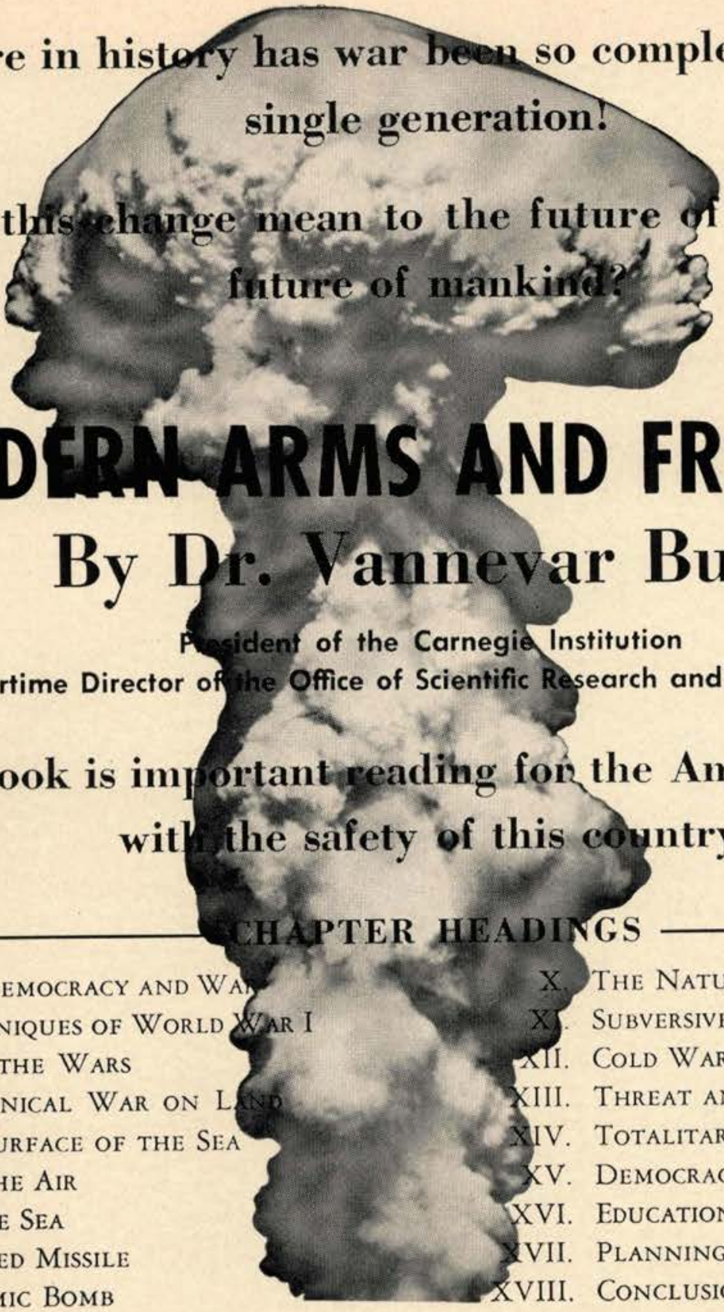

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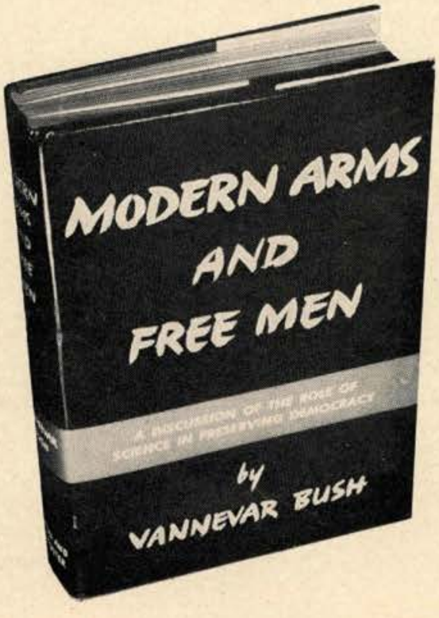

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CARDED

THE GUERRILLA: a Factor in War

by MAJOR ROBERT B. RIGG

GUERRILLA WARFARE has considerable appeal to men in time of national conflict. It offers a man a good chance of survival while at the same time providing him with the opportunity to destroy his enemy at close range. The targets are those of opportunity, not of demand. The partisan is usually the attacker. Defensive action is the exception, so partisan warfare becomes a form of primitive "sport"—the hunter and the hunted. Devoid of some of the more irksome facets of military service, partisan units become teams, the leadership of which is usually within the choice of the men participating. The burdensome necessities of administration and logistical planning are not dominant enough to dull the job of killing. Most every man is a fighter; and despite the hardships, morale is sustained in part by month to month successes. As war reduces men to a form of savagery—guerrilla action provides an outlet of hatred for males of all ages. Total war tends to make all civilians combatants.

THE AUTHOR—MAJOR ROBERT B. RIGG

Major Robert B. Rigg, General Staff Corps, is presently on duty in Washington. From 1940 to 1942 he served as a unit commander in mecz-cavalry and TD units. During the war he was U.S. Military Observer with six different foreign allied armies. Between 1946 and 1948, while observing the fighting in the China Civil War he was twice captured by the Chinese Reds, and the last time he was imprisoned and tried by a Communist court. His schooling includes the Associate Advanced Course at The Armored School and the Command and General Staff College.

The Implications Today

The industrial destruction that will characterize an atomic war can easily breed mass guerrilla action when field armies lose their means of logistical support and civilian masses are forced to evacuate the ruins of radioactive urban areas. This assumes that there is still the will to fight. Bombs can efface the war economy of a nation; they can also breed enemy resistance in guerrilla form. Having lost the means of industrial support, an enemy field army could disperse into partisan formations locally supported by small arsenals and factories too impractical to bomb.

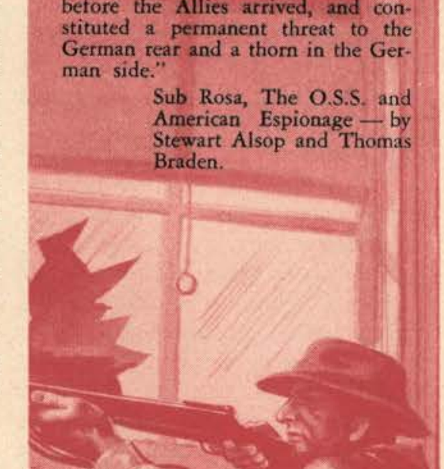
Whatever the phase of a ground war it is reasonably certain that the use of underground forces will increase in ratio to the length of a major conflict. The final effect of such militarily primitive forces should not be exaggerated, nor should the problem of combatting partisans be minimized. The French in 1812, the Turks and Germans in World War I, and the Japs and Nazis in World War II underestimated until too late, the effectiveness of the guerrillas opposing them. It should be remembered, however, that this resistance sprang from aggressions. Any future conflict can be characterized by the calculated use of "invisible civilian bands."

Since aircraft, tanks, heavy and automatic weapons have inspired the term "modern war" the tendency has been to scorn the effect of irregular forces against regular armies. However, beneath the pride of this disdain modern armies have created such special forces as rangers, commandos and similar trained *elite*. This simply reflects the need that heavily armed and armored-mechanized armies have for men who can weigh their military worth in terms of double, triple, or greater, the men of the opposition. While often militarily untrained, guerrillas form a part of this hard core of fighting men.

Initially regarded as a nuisance by the enemy, underground fighting units can grow in ratio to the war and eventually constitute a serious rear area problem. The solution to the handling of combat irregulars is not easily found in the axioms of military manuals. The German method—a mistaken one—was to shoot hostages and burn villages; yet the "invisible movements" only grew in the face of such measures. The answer does not lie here.

"In Italy, Kesselring declared Anti-Partisan Week throughout the areas of German occupation. Anti-Partisan Week, despite its familiar American ring, was an utterly ruthless campaign for the extermination of the Italian resistance. Even so, the Italian guerrillas, like the French, refused to be exterminated. They killed thousands of Germans, liberated cities as large as Milan, Venice, and Genoa before the Allies arrived, and constituted a permanent threat to the German rear and a thorn in the German side."

Sub Rosa, The O.S.S. and American Espionage — by Stewart Alsop and Thomas Braden.



In Earlier Times

Emperor Napoleon invaded Russia at a time when the peasants there loathed their servitude and periodically registered their protests through local revolt and the murder of landowners. The Pugachev insurrection of thirty-seven years earlier was still fresh in the minds of the Russian lower classes to whom Napoleon purportedly made indirect appeal. Stormy peasant agitation swept White Russia and Lithuania when the war began, but by promptly crushing this agitation and restoring feudal rights Napoleon took his mistaken stand. In effect he simply deflected peasant attention from anti-landlordism and fanned patriotism. It must be remembered that at this time army service was viewed with horror by the Russian peasantry. Nonetheless they rose up in arms against the invader as they were to do generations later. The effect of Russian irregulars and the Cossacks needs no amplification here, but it should be noted that for all their excellence, Napoleon's maxims of war contain no ready answer to the problems of combatting guerrillas.*

On the foundation of their guerrilla experience against the Japanese, the Chinese Communists developed an excellent army of irregular forces by 1945. While the causes of defeat of the Chinese Nationalist Army are many, it was the partisan form of warfare that the Nationalists were never able to successfully combat. The defeat of the relatively modern Government armies in China is an

---

*He stressed the necessity of hostages, particularly the execution of the more prominent men.

example of victory achieved by the major stress on guerrilla-style warfare. The real strength of the Chinese Reds lay in adherence to partisan tactics when the opposing army tried conventional methods of war. *Communism fosters this type of resistance.*

By itself partisan action rarely achieves complete military success, unless the enemy is very weak. The real strength of irregulars lies in the *combination* and *coordination* of their activities with regular armies.

The Germans were forced to divert units as large as divisions to combat the irregulars of the Soviet Union and France. In the former area large Axis forces were successfully isolated from their supply bases by partisan bands. The latter were often organized into brigades, and in the U.S.S.R. the partisan movement assumed large proportions. Its initial strength lay in the quasi-military training yearly given to civilians by the *Osoaviakhim,* but as the movement grew the Soviet high command assumed direction and control over large partisan bodies. Guerrilla activities were incorporated into strategic campaign plans. Technicians, officers and political advisers were flown to partisan bands along with radios, ammunition and other supplies. Casualties were evacuated by the same planes if the aircraft could land. Even yet, the magnitude of the Soviet guerrilla movement is not fully realized.

Eight months of Soviet Partisan warfare in the Leningrad area [reportedly] produced the following:

16,000	enemy soldiers killed
629	officers killed
67	Gestapo agents killed
163	spies killed
127	officers, soldiers captured
114	trains wrecked
8	command posts destroyed
89	planes destroyed on ground
98	tanks destroyed
25	armored cars wrecked
1,693	trucks taken or wrecked
188	cars taken or wrecked
99	gasoline trucks wrecked
529	telephone lines wrecked
125	ammo and food depots wrecked
368	railway and road bridges damaged in some form
77	places of damage to RR line
—plus	other claims in damage, etc.

—from *Russia's Fighting Forces* by Capt. Sergei Kournakoff.

The great Arab revolt, counseled and guided by T. E. Lawrence, is another historical example of large scale guerrilla action that met with success, although it must not be construed to outweigh the military importance of General Allenby's Middle Eastern campaign of which it was but a part.

Fortunate, but in a measure strange, was the absence of any prolonged resistance movement on the part of the Germans at the close of the last war.

The French maquis, supported by the Allies, illustrate the use of irregulars by an invasion force made up principally of foreign armies.

These and other special operations should be studied not only from the standpoint of how to cope with them if the occasion arises, but also how to use and exploit such groups to the fullest extent. Our maneuvers should henceforth include some "guerrilla opposition" not only to alert our soldiers to the problem, but to acquaint them with partisan methods which by circumstances they might be forced to adopt. Properly controlled by ground rules, such maneuver tests would aid in the evaluation of the leadership of our many new junior commissioned and noncommissioned officers.

In last year's maneuvers Colonel Charles C. Sloane demonstrated the everyday weakness and vulnerability of regular forces to such action when he pulled a partisan raid in Kentucky to capture a military headquarters with his civilian-dressed *Aggressors.* Some officers may cry that it is unfair for the *Aggressors* to resort to civilian disguises, but this is *realism,* and fact.

On a Chinese war front I have seen Communist companies dressed as farmers and with their scouts in Nationalist overcoats; in other places I have heard Nationalist officers complain that the Communists were taking unfair advantages of them by not wearing distinguishing uniforms!

In Northern Iraq in 1943 I witnessed the attempts of the Iraqi Army to suppress the minor Kurdish revolt of Mulla Mustafa. In the high mountains along the Turkish frontier the Mulla's Kurdish irregulars resorted to the only warfare they know—that of the stealthy guerrilla. The Iraqi Army dispatched a division to defeat Mulla Mustafa's followers who numbered less than six or seven hundred. The army unit, consisting mostly of Arabs from the plains and desert of Iraq, deployed and marched along conventional lines. Their tactics were the same. In the first real engagement the Kurds trapped most of the division between two mountain passes, and from the spoils of the carnage that followed, the Kurds were able to arm themselves with sufficient weapons and ammunition to prolong that "war" for over a year. True, there were no atom bombs, but the Iraqi Air Force couldn't even use the bombs it did have—there were no targets, but there was resistance that embarrassed a regular army for a long period.

Partisan activity is bred of patriotism sharpened by invasion and occupation. It is usually although not always the direct result of aggression. Depending on the issue or cause an army may *align* or *oppose* foreign irregulars in a campaign.

The present day soldier is *modern* because his weapons are the products of a vast industrial machine, but that soldier can remain a fighter even without large and powerful weapons, if he decides to do so. The 20th Century soldier of any army can still be killed by a rifle bullet, a knife, or a homemade hand grenade, if there is a furtive enemy there to wield the weapon. The partisan is often the harder man to kill.

RECONNOITERING

AS we approach annual meeting time of the United States Armored Cavalry Association it might be interesting to you to run over a few of the high points connected with our organization and its publication.

The Journal is, of course, the organ of the Association. Both date back a good many years; the Association to 1885, the Journal to 1888. Ours is by many years the first of the ground force journals.

Through 65 years of operation the Association has been the working force of the branch—an unofficial agency digging for the professional improvement and general advancement of the arm. That purpose was the inspiration behind the original constitutional provision for a Committee on Publication and Correspondence, to which fell the editorial management of a Journal of the Association.

IF you reflect for a moment, you'll appreciate that, in the case of the ground arms, the Journal is actually the Association. We do not have the procurement responsibilities which tie the Services so closely to industry, and broaden their membership field. Our members are scattered the world around, making assembly a difficult thing. The Journal thus becomes the common meeting ground of our Association membership.

Looking it over, the situation boils down about to this. The Association is an organization for the professional advancement of the branch. It promotes the educational qualification of its members. It is the forum of discussion, the reporter of facts, the sounding board of opinion, the spokesman of belief of the branch.

Your $3.50 a year is more than a magazine subscription. It constitutes your membership dues in the Association. It carries with it the benefits of Book Department discounts and price advantages. It contributes to the stockpile of funds which have allowed, and will assist in the future, certain key publication enterprises under our imprint. But most of all it contributes to the production of our professional branch journal.

IT is regrettable that we are not all able to rally round at a meeting once a year, to achieve the personal contact that would mean so much. With the bulk of the membership occupied well out of reach of the annual meeting, we must depend on the somewhat impersonal interest engendered in voting by proxy on Association business and for Association officers. That same distance narrows the field of candidates available for posts on the governing board.

The governing body of our Association, for which you vote either in person or by proxy, includes a President, Vice President, Secretary-Treasurer, Editor, and nine Executives, all of whom form the Executive Council, elected yearly. The Constitution requires that these governing members reside in the vicinity of Washington. "Vicinity" has been liberalized to meet the age of air travel, and our current Council includes members from Fort Knox, Kentucky, and the New Jersey National Guard.

This is a bit of background as we approach the annual meeting, in a period when your support of this key activity of your arm and your profession is more important than ever. What we're after is your wholehearted interest and support in every activity of your branch. We want your voluntary subscription, not the blackjack kind. We'd like to have you talk up additional subscribers. We want your comment on each issue of the magazine. We want to know what you in the field are doing. We want to know your thoughts on matters relating to our branch. We want you or your proxy at the annual meeting.

IF you are a Constabulary unit commander . . . a First Cavalry platoon leader . . . a Third Armored Cavalry Battalion S-3 . . . an Armored School Advanced Course student . . . a 50th Armored Division New Jersey National Guardsman . . . a 13th Armored Division Reserve of California . . . a Second Armored Division regular . . . or a Pentagon staff officer . . . you are as much a U. S. Armored Cavalry Association member as are we in the home office. How about jumping in—with both feet!

The Editors

Four years ago General Tomoyuki Yamashita, the "Tiger of Malaya," then commanding Japanese forces in the Philippines, came down out of the mountains of Northern Luzon to surrender to the United States 32d Division. Haled before a U. S. Military Commission as a major war criminal, Yamashita was tried, convicted and hanged. His case, which came before the Supreme Court of the Commonwealth of the Philippines and the United States Supreme Court, has become a *cause célèbre* with the publication of *The Case of General Yamashita*, authored by Captain A. Frank Reel, a defense counsel on the trial.

What are the implications inherent in this case? Was this a just or an unjust trial? Reel thinks it was unjust. Here is an outstanding review of the book by an eminent authority.

ABOUT OUR REVIEWER

Philip James McCook served as a private and corporal in the 6th Massachusetts Infantry in the Spanish-American War, participating in the Cuban and Porto Rican expeditions. Subsequently he was a member of Squadron A, New York National Guard, which in the late war was the 101st Cavalry Regiment (Mcz) and is now the 101st Cavalry Squadron (Mcz) of the N.Y.N.G.

In World War I, Major McCook was seriously wounded in action on the Meuse River in France, where he was awarded the Distinguished Service Cross, the Purple Heart and the Legion of Merit. Also during the World War I period he directed New York City's Mayor's Committee of National Defense and served as Federal Draft Director for New York.

From 1920 to 1943 Judge McCook was Justice of the Supreme Court of New York for the 1st Judicial District, resigning in 1943 to enter the military service once again. As a colonel in the Judge Advocate General's Department, from 1943 through 1945, he was engaged in research on military justice; review of trial records; and as observer of discipline and the treatment of military prisoners in North Africa, the Middle East and Europe, and in Pacific areas.

Judge McCook holds A.B. and LL.D. degrees from Trinity College; an LL.B. from Harvard; and an LL.B. from Columbia, and is a Psi Upsilon and Phi Beta Kappa. He is a trustee of Trinity College, and a member of the American and New York State Bar Associations; the New York County Lawyers Association; and the Association of the Bar of New York, of which he is also Vice-President. His is the ideal background for the review of this book.

The Case of GENERAL YAMASHITA*

An Exclusive Feature Review by PHILIP JAMES McCOOK

THE central figure of this book, after his surrender to United States armed forces operating in the island of Luzon, was prosecuted under a charge that, between October 9, 1944 and September 2, 1949, in the Philippine Islands he,:

> "while Commander of armed forces of Japan at war with the United States of America and its allies, unlawfully disregarded and failed to discharge his duty as commander to control the operations of the members of his command, permitting them to commit brutal atrocities and other high crimes against the people of the United States and of its allies and dependencies, particularly the Philippines, and he *** thereby violated the laws of war."

After trial by a military commission appointed by the proper military authorities, he was found guilty as charged and sentenced to death by hanging. The judgment and sentence were approved by the American general who had initiated the prosecution. An application for writs of *habeas corpus* and prohibition was made by Yamashita's counsel to the Supreme Court of the Commonwealth of the Philippines, and denied. A petition for certiorari to review this order was denied by the Supreme Court of the United States, which also denied an application for leave to file a petition for writs of *habeas corpus* and prohibition in that court challenging the jurisdiction and legal authority of the commission.

Clemency was declined by the President, and Yamashita was hanged.

The only reason these bare, basic steps in the case are set out here is that so much of the book is taken up with the question whether the accused was tried according to law. Unfortunately for the author's view in the negative, the point was settled affirmatively by the decision of the Supreme Court of the United States. He well states the fundamental difficulty himself:

> "Laymen often assume that a defendant who is aggrieved in any trial can 'appeal' to 'higher courts.' This is not necessarily true in all

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*THE CASE OF GENERAL YAMASHITA. By A. Frank Reel. University of Chicago Press. $4.00.

U. S. Army

The "Tiger of Malaya" surrenders to officers of the 32d Division at Kiangan, Northern Luzon, P. I.

civilian cases, and it is practically never true in military trials. Military tribunals constitute a sort of judicial system all their own, and the civilian courts will not interfere with them. They exist not so much to assure criminal justice in the armed forces as to aid the commanding officers in exercising discipline over their troops or in punishing captured enemy spies and other miscreants—all to achieve the end of a more efficient carrying-on of hostilities. Thus it is that civilian courts refuse to 'review' or to intervene in military courts' proceedings. The only exception that is made to this rule is when an accused can show that the army court had no business in trying him at all, or, as the lawyers put it, that it had no 'jurisdiction' over him."

Accordingly, it could not greatly have surprised him when Chief Justice Stone, in passing for the Supreme Court on point after point by the test of jurisdiction, said of them:

"These are questions within the peculiar competence of the military officers composing the commission and were for it to decide."

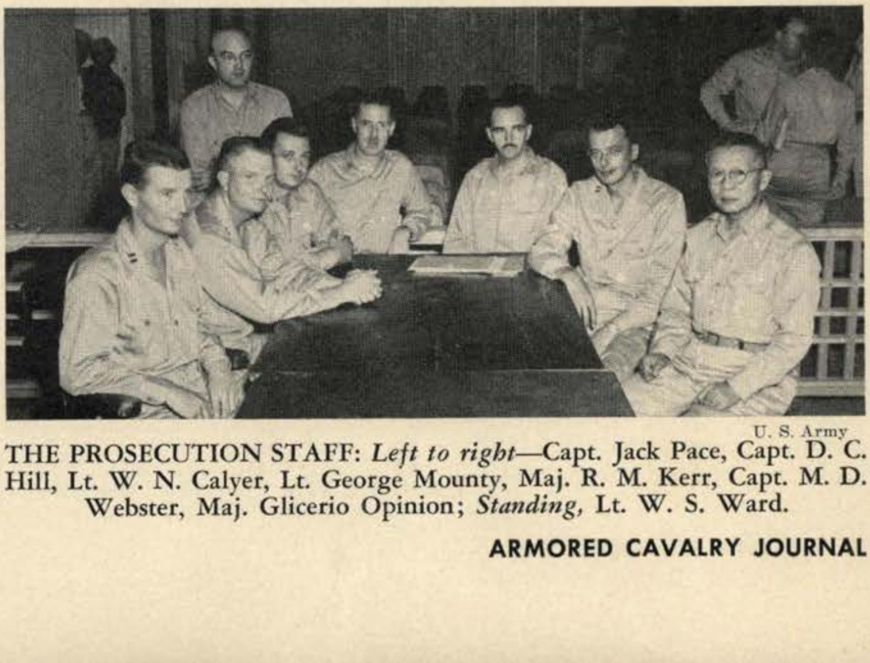
The motion to dismiss the entire case before the trial began perhaps raised the most important law question of all, for if the charge failed to state a crime the foundation of the whole accusation necessarily would fall. The majority opinion expressly held the charge sufficiently stated a violation of the laws of war.

When the Supreme Court held the commission had jurisdiction, Yamashita was doomed. Why then go further into "The Case of General Yamashita"?

Of course there is far more to this colorful, sincere, engaging and important volume, especially for any of you who may still carry an uneasy feeling about a famous litigation, injected when it was first reported. Before passing to the moral core of the matter, however, and indeed the better to understand, let me explain why I do not presently lay more stress upon some of the author's complaints. Suppose one believed that General MacArthur unduly interfered in the trial; or that there was too much of the Roman holiday, U.S. model, about the proceedings; or that indecent haste was employed; or that a mass of worthless evidence was received and relied upon; or that the lack of a lawyer on the commission was damaging; or that the conduct of the prosecuting judge advocates was unethical. Bad as such items would be, unless they actually counted in the result they must rank as relatively unimportant.

On Legal Ethics

In a different category, of course, should be placed such a grave reflection upon the military tribunal, the five-desk-general court below, as the quotation from a news magazine in the chapter on legal ethics: "In the opinion of probably every correspondent covering the trial, the military commission came into the courtroom the first day with the decision already in its collective pocket." That would be infamous if true, indicating revenge, not justice. If it is not true, can the authority which appointed the commission be held blameless for such a suspicion? Out of the hundreds of general officers with combat experience available in September 1945, might not one have been spared to help try this eminent fighting foe? Out of the thousands of mature lawyers wearing the U.S. uniform at that time, could not one have been found to expound as law member, to the



U. S. Army

THE PROSECUTION STAFF: *Left to right*—Capt. Jack Pace, Capt. D. C. Hill, Lt. W. N. Calyer, Lt. George Mounty, Maj. R. M. Kerr, Capt. M. D. Webster, Maj. Glicerio Opinion; *Standing,* Lt. W. S. Ward.

U. S. Army

THE U. S. MILITARY COMMISSION: ***L to R,*** **Brig. Gen. Morris C. Handwerk, Maj. Gen. Richard C. Donovan, Maj. Gen. Royal Reynolds, Maj. Gen. James A. Lester, Brig. Gen. Lathrop R. Bullene.**

rest of the court which was to pass first and finally upon the guilt and subsequent fate of this man, the principles, traditions and history of American law?

Question of Control

The result, that is, the final finding, raises the chief controversy, which depended upon the novel theory of command control responsibility. From the author's own admissions, I gather that he does not dispute the occurrence of enough atrocities of all kinds, committed by armed Japanese (mostly long since dead) after Yamashita's arrival at Manila late in 1944, to damn him completely, by any decent standard, *if he was then actually in control of the perpetrators as their commander and directed or even permitted, or afterwards condoned, their acts.* Reel's main contention is that the General was not in control of them, because they were naval not army troops, and also because, after he left Manila in retreat from the American army, he was continuously on the run, out of touch with the remnants left behind and, through the activity of the very foe who now charges him with command responsibility, deprived of any effective chance to communicate with them.

A subdivision of this branch of the defense relates to the assertion that all these crimes were in truth perpetrated, not by the army but by the relatively large Japanese naval force in Manila, which obeyed its own admiral's orders to stay and defend the city, and disobeyed General Yamashita's orders to leave. (It seems that the Japanese Army and Navy, like some others, did not always agree or cöoperate.) By the way, it does not help Captain Reel to recall now that in the later trial of Admiral Toyoda, Commander-in-Chief of the Grand Fleet, the prosecution used this particular part of Yamashita's defense as a principal count. The Toyoda military tribunal found as a fact that these Manila naval forces were commanded by Yamashita, and acquitted Toyoda.

According to Reel's book the Commission, having received no evidence either of actual control or of actual direction, and much evidence inconsistent with either control or direction, wrongly reached its tremendous conclusion. The mere existence of so many similar misdeeds, it argued and held, proved that the General nominally in command must have known of them and therefore was responsible for them under the laws of war. That, Reel assures us, was in essence and effect the theory on which Yamashita's judges found him guilty. That, he contends, was unjust. If in this respect the author's conclusion is sound, it was not the trial, or any part of it, which was according to military law and standards unfair, but the conclusion, that is the finding, of the Commission.

Japanese Reaction

How did and do the Japanese feel about Yamashita and his case? One who has discussed the subject with but few of that race can only surmise. In their eyes Singapore *vis a vis* Britain was the equivalent in national humiliation of Pearl Harbor for America. Before Manila fell to the first Japanese invasion under Homma, Yamashita, with only 30,000 troops, had dashed and hopped down the Malay Peninsula and, by a successful bluff, captured more than 100,000 British defending a fortress advertised as impregnable. He became a hero whose picture ap-

U. S. Army

THE DEFENSE COUNSEL STAFF: ***Seated L to R,*** **Lt. Col. J. G. Feldhaus, Col. Harry E. Clarke, Lt. Col. W. C. Hendriz, Jr.;** ***Standing,*** **Capt. A. Frank Reel, Maj. G. F. Guy, Capt. Milton Sandberg.**

U. S. Army

A view of the courtroom during the Yamashita trial.

peared on every farmhouse wall in Nippon. Then suddenly, it seems because not enough of a fire-eater to suit Tojo and the High Command, he was exiled to Manchuria for three years, training troops. He did not move his headquarters to the Philippines until late 1944, less than a year before Japan's final collapse. Here he proved himself, in the days of defeat and defense, as sound and worthy a leader as in victory and offense, obeying like the rest of his countrymen his Emperor's orders to surrender but destined, as a result of that obedience, for imprisonment, trial, disgrace and death.

A System of Justice

What would you think, if you were a Japanese? Not, I believe, that your idol had an unfair trial—rather one which by your standards seemed fair enough, brought up as you would have been under a system of criminal justice in which the state has all the rights. Yamashita himself apparently did not consider his *trial* unfair, and was surprised and shocked only when he found that a court of responsible soldiers was holding him, another responsible soldier, criminally liable for something he could not help. Unshaken by cross-examination, he testified (and Reel insists that there is not a particle of evidence to the contrary) that he was not in communication with those who were inflicting starvation, torture, murder and rape, wholesale and retail, and was convicted only on the strength of the volume of proven crimes. After that idea had sunk in, the accused was ready to expect anything.

Now here is where one should examine Captain Reel's study with care, and as objectively as possible, to learn what American laymen and civilians, not merely lawyers and soldiers, think of this celebrated trial and its outcome. Perhaps Tokyo's views, as suggested, are not at present too important. Also, possibly, this is not the moment to give Japanese communists a pretext for exciting hostility towards America by charging revenge under cover of justice.

Forum of Opinion

Suppose for the sake of argument we cannot, as to lawfulness, go behind the opinion of the majority of the Supreme Court. This does not mean there is no American forum in which one who claims the trial was unfair, the result unjust, can be heard. Public opinion is the proper forum—American public opinion.

I am reviewing a book, not a court record. Even with the minutes of the trial before me (and they are not), I would certainly hesitate to say from them alone, without actually having seen and heard the witnesses including Yamashita, that the trial had been unfair, or the result unjust on the evidence received. But an obstinate fact remains to support those who still attack this case. Two American Supreme Court justices, in their dissents, after reading the record, expressly accuse the military tribunal of disobeying the dictates of the Constitution, without military necessity or other emergency, in that this man was rushed to trial, given insufficient time to prepare an adequate defense, and deprived of the benefits of some of the most elementary rules of evidence. That is what Mr. Justice Murphy said, and Mr. Justice Rutledge remarked that he could not believe in the face of such a record that the petitioner had the fair trial the Constitution and laws command. Justice Rutledge also agreed with Justice Murphy's severe comments on the substance of the American dilemma. All of this, the latter says, was done:

> "*** without any thorough investigation and prosecution of those immediately responsible for the atrocities, out of which might have come some proof or indication of personal culpability on petitioner's part. Instead the loose charge was made that great numbers of atrocities had been committed and that petitioner was the commanding officer, hence he must have been guilty of disregard of duty. Under that charge the commission was free to establish whatever standard of duty on petitioner's part [that] it desired. By this flexible method a victorious nation may convict and execute any or all leaders of a vanquished foe, depending upon the prevailing degree of vengeance and the absence of any objective judicial review."

Moment of High Feeling

The Romans had two maxims rendered respectively "Woe to the Conquered" and "Amid the clash of arms, laws are silent." Perhaps it is a useful reflection for a general responsible for the training of troops, perhaps not, that some day he also, held to account for his official actions, may find himself in the dock listening to a mother's demand of vengeance upon him for a defiled daughter or a butchered baby. Military men claim to be realistic. War is tough on generals, but not on them alone.

So, as you see, I am not as excited

as many of the commentators about the mere way Yamashita was tried, the conclusion reached by the commission, or the penalty inflicted, though troubled about the case, I admit, from the first. If you do not approve the kind of law, viz., military justice, selected to try Yamashita by, or the way it was applied, do not forget the alternative in wartime when, nationally and individually, primitive passions run high and wild. If his United States captors had turned him over to the Filipino populace, he would probably have been torn to pieces between Baguio and Manila. Even the law-abiding British might not have restrained their bitterness against the brown man who shook his finger under the white man's nose in the bank cage at Singapore. Military law, though less deliberate than civilian law, has like the other been built up through the ages to prevent or at least to replace, just that sort of private vengeance. Perhaps you think it is only a front for vengeance. You may decide, after all, that it would have been less hypocritical, more merciful as well as cheaper, to shoot him on the spot. If however you still prefer the forms of law, do not expect the impossible while the fever of war is still upon the nations and their people.

In Soldierly Tradition

That is all I have to say about the alien, beribboned figure under the Kleig lights, the "potato-faced yellow bastard," "the Tiger of Malaya," whose very name was sometimes rudely twisted by our GI's. You might have liked and trusted him, had you known him, as much as his counsel and his guards did. If he lived and died like a man and a soldier, according to his traditions, which is what they tell us, we need not dwell longer on his personal fate. One can be glad all the same that he was conscientiously, ably, persistently and courageously defended by Colonel Harry E. Clarke, a credit to the Judge Advocate General's corps, and his squad of military lawyers and that they do not yet despair of vindicating his reputation.

The Fundamental Issue

If there are statesmen or philosophers in the audience, I strongly recommend they now return to the first page of this book and see whether Reel is right on the deeper and inescapable issue where, he appears to concede, lies the sole importance of the case, the sole reason for writing the book. This is in substance what he says, as amplified by later passages:

A. Frank Reel, author of *The Case of General Yamashita.*

After actual hostilities were over, a wholly American military commission was deliberately set up in the ruined city of Manila to try the surrendered military commander of a conquered nation for an alleged war crime. This was the original decision America made, and it was in large part one of policy.

The commission declared the law, without the benefit of a lawyer in its membership, and pronounced judgment and sentence, which were subsequently approved and executed by order of the American general who had initiated the prosecution.

The accused was degraded and hanged.

Meanwhile, the highest American civilian court by its rulings let the judgment and sentence stand and the civilian American chief executive, who was also the commander-in-chief of the American army, declined to exercise clemency.

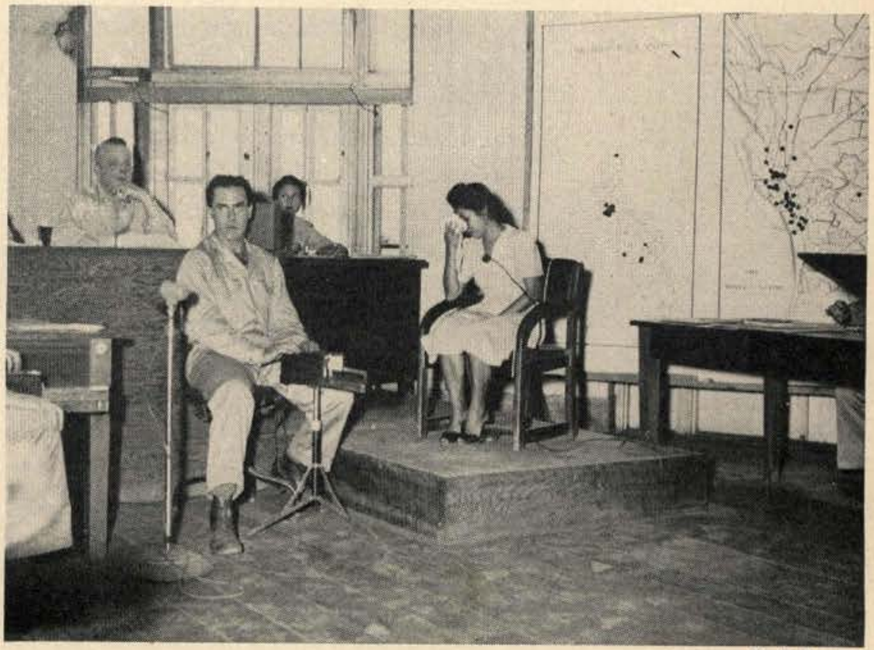
These acts were all important, and all were implicit in the original decision, as logical consequences.

In the Cause of Justice

If the original decision was right, it established a precedent of justice for the nations. If wrong, it will prove a curse on the cause of justice unless publicly acknowledged to have been unjust.

Such a confession will not restore Yamashita to life, but Reel thinks it may do a future generation of Americans some good.

This is a book of great significance to all soldiers. Order your copy from the Book Department.



U. S. Army

A Filipino witness testifies of atrocities committed against her family by Japanese troops.

Taking Stock

From both ends

In most any kind of activity, year's end is the time for taking stock. It's a moment for pause, for a look back over the course already run—and it marks a point from which to view the future, to see what it holds. In our activity, it's a good way of checking from both ends—yours and ours—to see if we're doing a job.

Our end of things is laid down in the product itself, the magazine. A glance over the editorials and the Reconnoitering columns, and an analysis of the six numbers of the year will show what we think and what we're trying to do. For your end we must depend on letters or verbal comment. These are often difficult to break loose from you.

As expressed and carried out, here is a look at policy in the home office of your Association.

Branch Journal

First of all, we consider this a branch journal. Our purpose in life is that of serving the members of our branch. It was set down thus some sixty-five years ago, and a constant review of the background of our activity has indicated only the need for reaffirmation of our original aims.

A branch magazine, therefore, represents the latest thought in our field. This should include a coverage on training, doctrine, tactics, techniques, technical subjects, the academic area, research and development, the relation of all components to the picture, and, above all, the proper relation of this branch segment to the ground forces, to the military, to the service and to the national and international picture as a whole.

This view of the whole is the basis for the balance of content which brings you in each issue among other things at least one good general type article, one combat narrative, a feature book review on a top subject of the moment, a range of articles on technical and academic subjects in our field, a resume of news notes applicable to our branch, a set of questions to test your knowledge of world events, and a section to keep you informed of the current and long-range periodicals and books which form so necessary an adjunct to your career.

The team angle

To place our branch in its proper balance in its own field, we try to give you the best on each phase of the armored team; the amphibious-armor angle; the air and armor side; the air transport end of things; and the appraisal of this activity in the armies of other nations.

Today, our defense pattern must and does include industry in a close cooperation with the military. Only in this way are we able to build and produce the best tools with which to accomplish our mission. Thus, in the Journal we have brought in several articles by industry. For example our armored vehicles are now considered by weight and size for air transport. We have a full interchange of information between the maker and the user.

Authority and attention

The Book Section is one of our most important mediums for bringing the international scene to your attention. With the kind assistance of Vera Micheles Dean, Charles Collingwood, Fletcher Pratt, Dr. Ralph Bowers, Judge Philip McCook and H. V. Kaltenborn, we have offered reviews by top authorities on leading problems of the day, which might otherwise have received only superficial attention.

All in all, it is evident that our branch has a tremendous range of activity. The ramifications are amazing. There are areas upon which we have scarcely touched as yet. Nor is the magazine perfect by any stretch of the imagination. We have a long way to go.

A new face

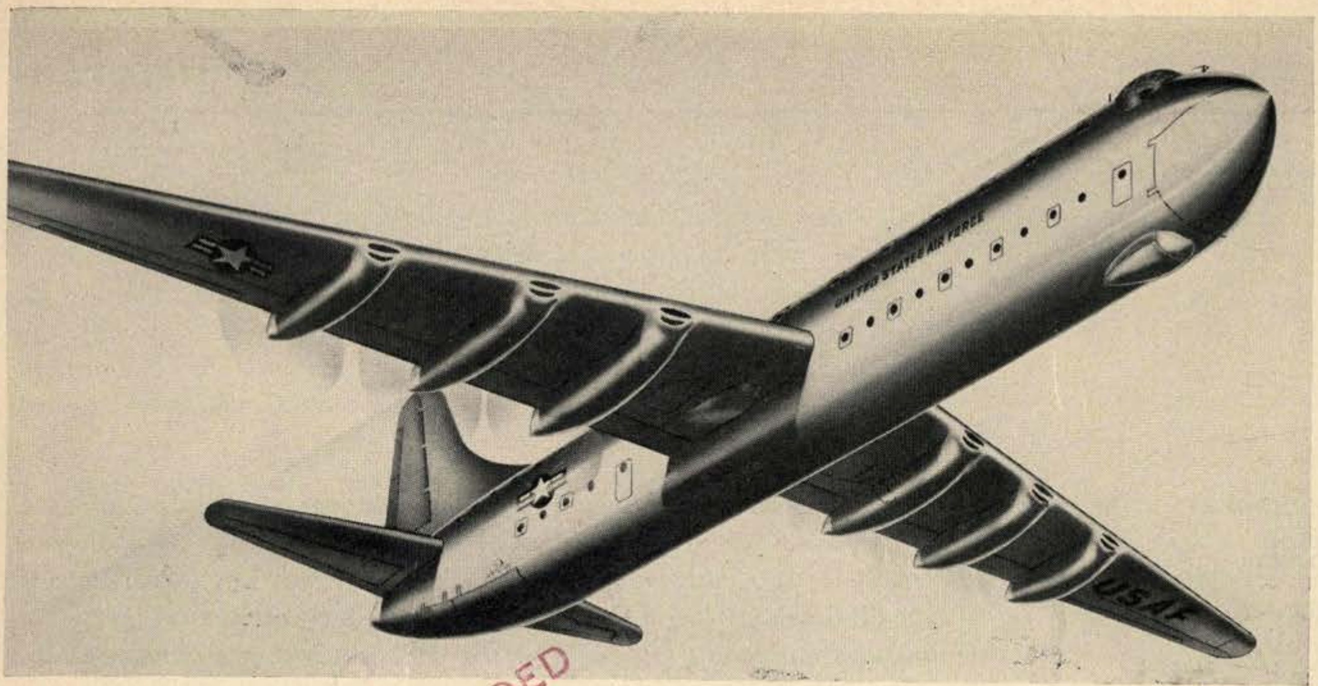
The year has seen a complete change of make-up. The cover is new, the story heads are new, the make-up is new, there is an increase, and a substantial one, in pictures in the magazine. We have in these last two numbers added color. In the last three we have added art work. At the outset of the year we had to absorb close to a 25% increase in printing costs resulting from a revision of contract with our printer. Looking back over all of this, we have every reason to feel pleased with our progress.

At this point we might turn to you. Are we doing the job as you see it? Are we meeting your needs? Will you sit down and let us know how you think the Journal is doing, and offer some suggestions. On our part, we'll welcome them. Our desire is to identify you more closely with our mutual product, the Armored Cavalry Journal. Some of the burden rests with you.

Glancing ahead, we can assure you of some fine items already firm on the prospectus of coming issues. Much of the best talent in our branch is at work on our behalf. The College of Armored Cavalry, The Armored School at Fort Knox, is providing us with the outstanding academic and technical material comprising a substantial portion of our content each issue.

Season's Greetings

As we reach the close of the year the Staff would like to express its appreciation for the grand assistance from the field, and to extend the Season's Greetings to all.



Consolidated

CARDED

Air Transport of Armored Vehicles

by J. W. LARSON

THERE were few spectators last April 15 as the big plane roared down the runway at the Fort Worth Division of Consolidated Vultee Aircraft Corporation. After all, the flight was a part of the regular testing program. The handful of onlookers, however, saw aviation history made as the wheels left the runway and the plane took off over Lake Worth on a three-hour test flight.

The Top Load

The XC-99 military transport was carrying 100,000 pounds of simulated cargo—heaviest load ever taken aloft in one airplane. The air carriage of a cargo load almost double anything previously known was no longer just an item of a flight test program. It was now an accomplished fact.

To the commanders of airborne divisions, or to anyone interested in making entire armies airborne, the military implications of the above flight are obvious. Here, for the first time, was an airplane heavy enough and roomy enough to haul many of the largest pieces of Army equipment, including armored vehicles.

And now that the two tank battalions formerly attached to an airborne division have been made an integral part of it, the need for developing large transports capable of carrying medium tanks and other heavy armored vehicles has become even more urgent.

Experimental Model Described

The XC-99 is also able to carry an impressive number of troops or litter patients. The double-decked plane can haul 400 soldiers or 300-odd litter patients and their attendants.

The XC-99 is an experimental transport version of the long-range B-36 bombers in production at Convair's Fort Worth division. Like the B-36, it is equipped with six pusher-type engines and four-wheel main landing gears. These eight 56-inch main wheels distribute the XC-99's weight over a comparatively large area of the runway and enable the plane to operate from almost any airfield that can accommodate medium bombers. The multiwheel gear eliminates the need for extra-thick runways; and the high engine powers available to the plane for takeoff, coupled with reversible-pitch propellers and adequate brakes for landing, eliminate the need for extra-long runways.

Wingspan of the B-36 and the XC-99 is the same—230 feet. The XC-99, however, is 182½ feet long and 57½ feet high, 20 feet longer and 10 feet higher than the B-36.

The XC-99 has a top speed of more than 300 miles per hour and a maximum range, with reduced loads, of 8,100 miles. Service ceiling is 30,000 feet. Design gross weight is 265,000 pounds.

Improved for Production

The XC-99 is an outstanding airplane. But profiting from the experience gained in designing, building, and testing it, as well as scores of B-36 bombers—and noting that transport requirements have changed since the experimental model of the XC-99 was designed—Convair engineers are now proposing to the Air Force a production model of the XC-99 with several significant improvements.

This proposed C-99 will be able to haul bigger loads (both in size and weight) over longer ranges than any other airplane either in existence or

Drawing of the proposed C-99, long-range troop and cargo plane capable of carrying heavy armored vehicles. Incorporating improvements learned from building and testing the experimental XC-99 transport and B-36 bombers, the double-decked C-99 represents a major advance in aerial transportation. It can carry 400 fully equipped troops, or 100,000 pounds of heavy equipment or cargo, or 343 litter patients and 33 attendants.

The aircraft industry has been challenged to develop transports that will make tomorrow's airborne armies totally airborne. Looming large in this challenge are the heavy armored vehicles, which must sprout wings along with the men who use them. In this article the Chief Engineer at Consolidated Vultee's Fort Worth division discusses the only plane in existence or in prospect that can carry armored vehicles like the 91,600-pound M45 tank and the 92,300-pound M46 tank.

in prospect. It is therefore admirably suited for the task of transporting armored vehicles.

It differs from the experimental model in at least five ways: (1) higher-horsepower engines, (2) easier loading through nose and tail doors, (3) more usable cargo space, (4) pressurized crew compartment and upper deck, and (5) B-36-type flight deck, including bubble canopy.

Performance

Installation of higher-horsepower engines will substantially raise the C-99's maximum takeoff gross weight. This increase in gross weight, plus improved fuel-consumption characteristics of the proposed engines, will enable the C-99 to carry a 100,000-pound load of tanks, guns, and troops nearly 2,000 nautical miles farther than the same load can be carried in the experimental XC-99. Carrying this 100,000-pound payload, the C-99 can take off from bases in the eastern United States and fly non-stop to bases in England and western Europe. At reduced ranges the C-99 can accommodate loads up to 116,000 pounds.

For Armor's Mobility

Mobile equipment will be able to drive directly on or off the plane through the clamshell nose door and the elongated tail door by means of self-contained low-angle ramps. Electric hoists, operating on overhead rails extending the length of each cargo compartment, facilitate loading, shifting, and unloading of heavy equipment and cargo. These hoists, used as powered winches, can pull non-powered vehicles up the ramps and into the C-99. (Unlike the XC-99, the C-99 fuselage sits level with the ground, making for easier loading of heavy vehicles.)

The entire lower cargo compartment fully opens up at both ends, providing entrances nearly 12 by 13 feet and permitting maximum utilization of fuselage cross section. These spacious doors remove the restrictions imposed by hatch-size limitations and readily admit the largest items of equipment needed by an airborne division.

J. W. Larson, chief engineer at Convair's Fort Worth division, has spent 21 of his 46 years in the aircraft industry and has been with Convair since 1934. He came to Texas in 1942 shortly after the company opened its Fort Worth division, which during the war produced approximately 3,000 of the famed B-24 Liberator bombers and C-87 transports. As chief design engineer, and later as assistant chief engineer and then chief engineer of the Fort Worth division, Larson has been instrumental in the development of the long-range B-36 bomber. The design proposal for a production model of the C-99, a double-decked transport capable of carrying medium tanks and other heavy armored vehicles, was prepared under his direction.

The proposed air freighter has 21,715 cubic feet of usable cargo space (volume projected above cargo floors) —an increase of 57 per cent over the XC-99. This substantial improvement was accomplished by enlarging the fuselage and changing the size and shape of the compartments. The revised lower compartments now accommodate a substantial number of armored vehicles which cannot at present be delivered by air.

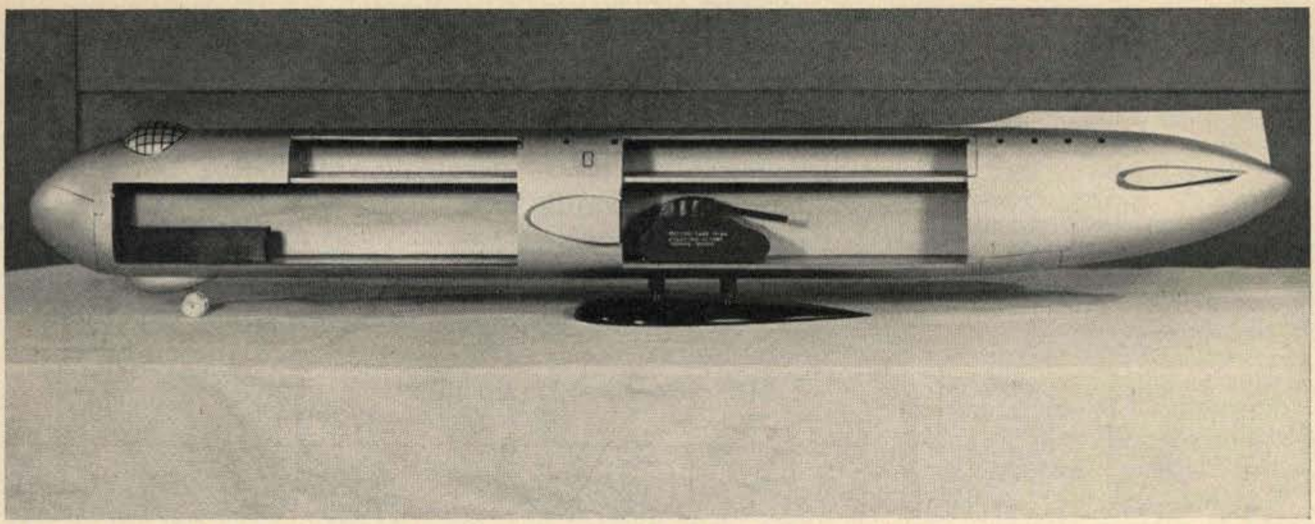
What the C-99 Can Carry

Consider, for example, the 252 items shown in the tentative draft of "Technical Data for Army Field Forces Equipment" (Project AB2048, prepared by Army Field Forces Board No. 1). Of the 252 pieces of equipment, the C-99 can carry all but five. (These are three boats and two barges that exceed dimensional limits of the plane.)

It can carry one or more of every carriage, carrier, half-track, tractor, tank, howitzer, gun, and launcher listed in the report—and that includes the 240mm M1 howitzer and carriage (with a combined weight of 98,820 pounds) and the M-26, and M45 medium tanks. In the majority of cases, furthermore, after the maximum number of a given item has been loaded, the C-99 can still accommodate a considerable quantity of cargo or troops, before attaining its normal payload capacity of 100,000 pounds.

Patton Tank Aloft

For example, it can carry an M46 medium tank, plus 7,700 pounds of cargo or 30 troops. It can carry two light tanks. Other possibilities include (1) an M43 8-inch howitzer, plus 17,000 pounds of cargo or 68



A 92,300-pound M-46 medium tank can easily be carried in the C-99's spacious lower compartment. In addition, the proposed plane can accommodate 30 troops or 7,700 pounds of other equipment or cargo.

troops; (2) an M1 120mm gun and mount, plus 38,000 pounds of other equipment or 152 troops; (3) two M39 armored utility vehicles, plus 29,000 pounds of cargo or 110 troops; (4) an M32A1-B3 tank recovery vehicle, plus 38,300 pounds of cargo or 155 troops; (5) 12 M29 cargo carriers plus 207 troops; and (6) 28 quarter-ton command reconnaissance trucks ("jeeps"), plus 31,400 pounds of cargo or 125 troops.

A Ground Force Job

The C-99 will be able to carry even greater numbers of these and other heavy vehicles when current and future efforts have succeeded in reducing their sizes and weights in order to make them more easily transportable by air.

Because of the C-99's ability to carry these large loads over long ranges, the direct flying cost per ton-mile will be extremely small. Similarly, the C-99's "rate of work"—as expressed in ton-miles per hour at various ranges—far exceeds that of any other airplane.

The crew compartment and the upper deck of the proposed C-99 are pressurized to provide greater comfort. While delivering armored vehicles or other matériel, in the lower compartments, the plane can still carry 183 troops in the pressurized upper deck under all-weather flight conditions. (The pressurization feature is particularly significant in transporting litter patients.)

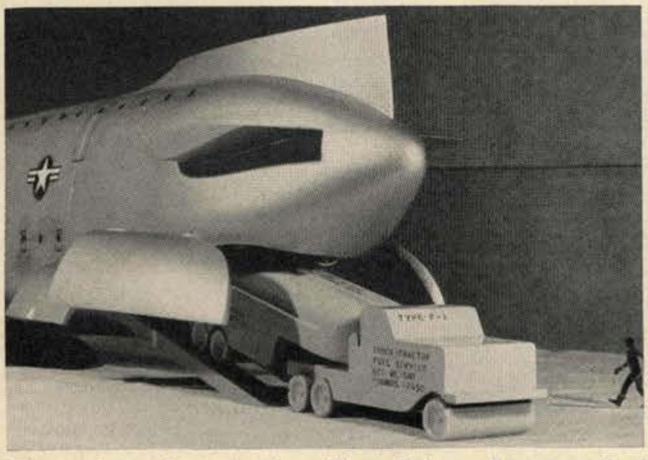
The flooring, particularly in the lower cargo compartments, is designed to carry high unit loads and is reinforced locally to withstand the highly concentrated loads imposed by heavy armored vehicles.

Track-Type Gear for C-99

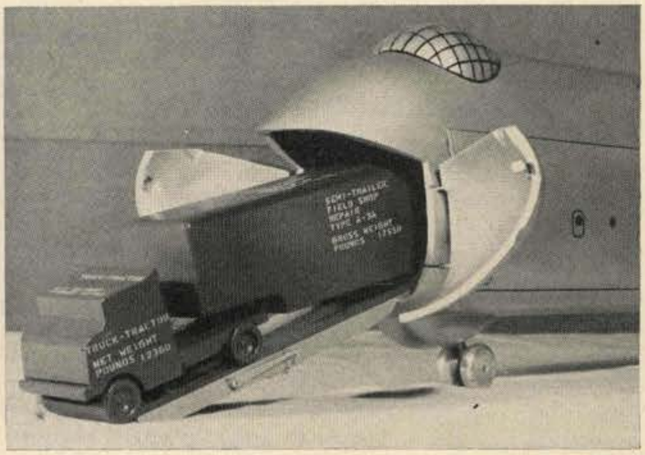
The utility of the C-99 as a carrier of armored vehicles could be expanded still further by the installation of the track-type landing gear. The C-99's four-wheel gear is readily interchangeable with the track gear.

To Advanced Bases

Because this endless-belt type arrangement greatly increases the ground contact area of the landing gear and thus reduces the footprint

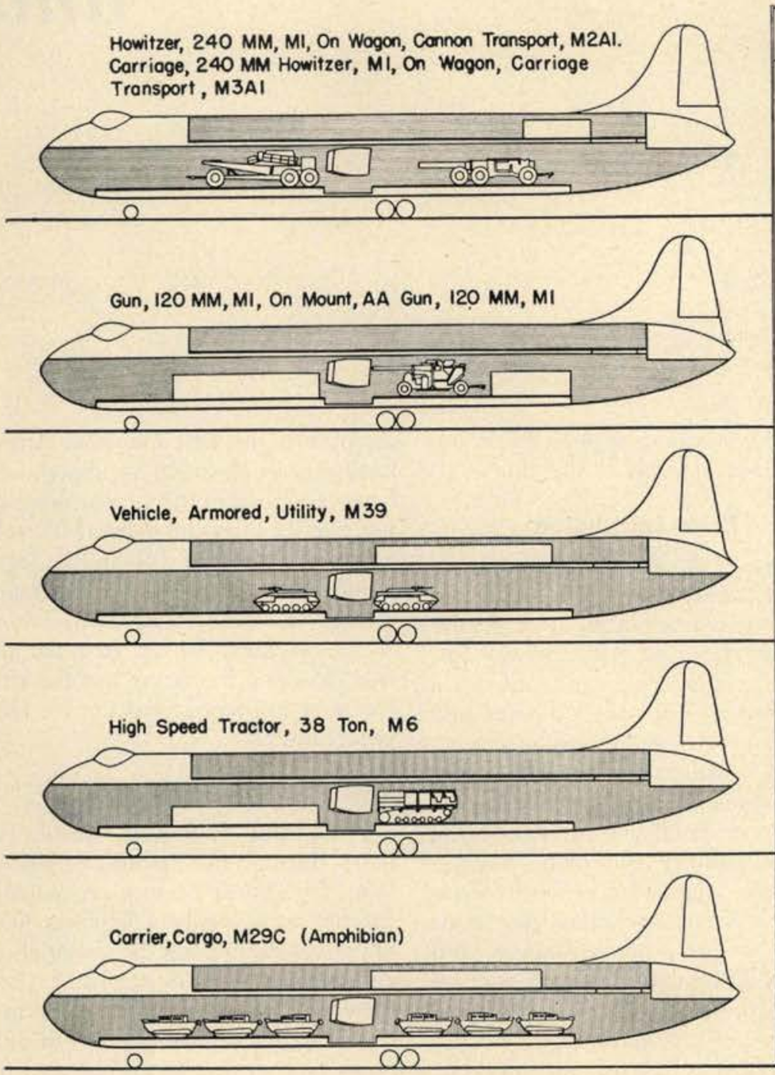


Shown here, in scale, is a Type F-1 truck-tractor fuel service unit being backed into the C-99 by means of the plane's self-contained ramps and its elongated tail door. Note amount of clearance provided by the wide-opening door. This door and the clamshell nose door in the C-99 readily admit the largest items of equipment needed by an airborne division.



Consolidated

The scale model of the C-99 provides a close-up view of the clamshell nose door and the low-angle ramps used in loading. The entire lower cargo compartment of the C-99 fully opens up at both ends, providing entrances nearly 12 by 13 feet. These spacious doors remove the restrictions imposed by hatch-size limitations.


Howitzer, 240 MM, MI, On Wagon, Cannon Transport, M2AI.
Carriage, 240 MM Howitzer, MI, On Wagon, Carriage Transport, M3AI
Gun, I20 MM, MI, On Mount, AA Gun, I20 MM, MI
Vehicle, Armored, Utility, M39
High Speed Tractor, 38 Ton, M6
Carrier, Cargo, M29C (Amphibian)

UNIT WEIGHT LBS.	LENGTH INCHES	WIDTH INCHES	HEIGHT INCHES	NUMBER CARRIED	ADDITIONAL LOAD OPTIONAL CARGO LBS.	TROOPS	C G % MAC TAKE-OFF	LANDING
47,720 GROSS (CANNON)	439	116	84	1				
51,100 GROSS (CARRIAGE)	430.5	118.5	128.25	1	1180	47	29.9	32.7
62,000 GROSS	369	123.5	124	1	38,000	152	29.9	32.7
35,500 FIGHTING	214	113	80.5	2	29,000	110	29.9	32.7
76,000 FIGHTING	258	120.5	104	1	24,000	96	29.9	32.7
5975 FIGHTING	192	67.25	71	12	28,300	111	29.9	32.7

The above drawing shows how easily some of the larger items of armored equipment fit into the spacious lower compartment of the proposed C-99. The table at right of drawing lists weight of the prime load, together with the quantity of cargo or troops that could be carried *in addition* to bring total payload of the C-99 to 100,000 pounds.

pressure, a C-99 with track-type gear could operate off quickly prepared runways. This would enable strategists to effect rapid delivery of heavy ordnance equipment and troops to advanced bases and would make it possible for the C-99 to land near combat zones in order to accomplish mass evacuation of litter patients. (The C-99 will accommodate 343 litter patients and 33 medical attendants.)

The C-99 represents a major advance in aerial transportation of heavy equipment, troops, and high-priority cargo. It affords a mobility of men and matériel that allows concentration of well-trained troops and essential equipment at strategic points at strategic times. For example, all of the troops in an entire airborne division, now approximately 17,500 men, would be moved simultaneously in only 44 of these C-99 transports.

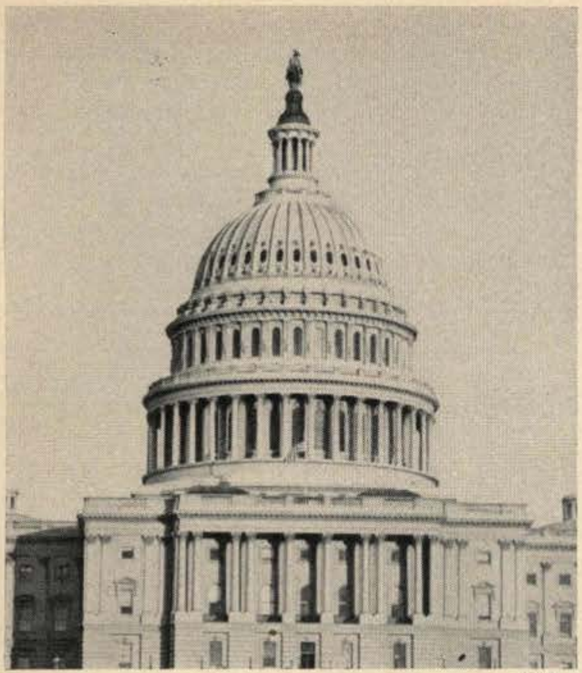
Comparatively Low Priced

One of the chief drawbacks voiced against the very large transport is its initial cost. By "very large transport" I mean one capable of carrying the armored vehicles, matériel, and troops that will have to go by air, in quantity, before the growing concept of the fully airborne army is realized. Since the development costs of the C-99 have been borne by the XC-99 and the B-36, the proposed C-99 would require relatively small expenditures for additional research and development. It would also require a minimum of engineering man-hours. Thus, delivery of the planes could begin in a comparatively short time.

I have advisedly used the words "growing concept of the fully airborne army." The trend toward total air transport of fighting forces is unmistakable.

For reasons outlined above, the proposed C-99 gives substantial encouragement to this trend. For with it, just a year or two away, America has a practicable method of carrying heavy armored vehicles like medium tanks. Without it, these vital weapons of combat are doomed to remain earthbound for many years to come.

Legislation and



Bell

IN its development into M-Day adulthood, our modern peacetime Army has reflected an increasing awareness of a close and important relation to legislation. The evolution of this legislative-military association is a part of the pattern of our country's growth. Some of the background makes an interesting story.

First Efforts

Toward the end of the Eighteenth Century the colonists who were to become our first national citizens expressed through their representatives to the Continental Congress their anger at the tax spankings administered by the parent across the water. The noble and patriotic, but somewhat infant legislators, turned their thoughts to retaliation against the burdensome administration—rebellion, a revolution! However, before they could consider a course of action, the citizens took matters into their own hands, resisting the advances of the British troops. This military action forcibly projected the Continental Congress into the business of national security and defense by legislation, although this was not recognized as such at the time.

Early Legislation

The first Army legislation was, to say the least, mild in conception and ineffective in application. A resolution on the Fort Ticonderoga surrender and the appointment of a committee to study the Colonies' military situation were the astonishingly limited results. Shortly afterward, the Continental Congress reacted a little more boldly. It tightened the reins on military legislation by adopting the resistance forces as the Continental Army, including provisions for its control, administration and supply. The provisions were well intentioned, but weak in Congressional support and coordinated effort.

First action toward a future Department of Defense came with the appointment of Colonel George Washington as Commander-in-Chief of the Army, with responsibility to Congress. He was the "Department," answerable to Congress for the information required to effect legislation for funds, conscripts, ordnance and supplies for our first American Army. Liaison was of manifest importance. It was supplied in this first instance by none other than the general himself.

Thus developed the initial legislation by the Congress for the Army, along with its necessary twin, liaison. Then, as now, liaison between the Congress and the Army was the vital factor in military legislation for both peace and war.

Weak Period

From the American Revolution down through the Spanish American War, legislation bearing on national defense was largely a hopeless jumble of words, lacking the essentials of a premeditated policy or plan. Liaison between the War Department and the Congress was meager, with only occasional flashes of brilliance; for example, Lincoln's dealings with Congress and the Military. The Emancipator's efforts stimulated Congressional energies to the point of enactment of a halfhearted conscription law, despite the fact that it was opposed by many constituents as an un-American measure.

How do we effect the legislation that keeps us strong in peacetime and prepared to meet the exigencies of difficult times? What is the background on the all-important relation be-

by LIEUTENANT COLONEL MILLARD G. BOWEN, JR.

the Military

U.S. Air Force

A Foresighted Program

At the turn of the century, a resourceful Secretary of War, with an appreciation of the organizational and supply problems of the War Department, instigated a forward-looking legislative program, accompanying it with some of the most effective peacetime Congressional liaison of the era. This planning, with Presidential and Congressional support, provided the impetus that brought into existence the National Defense Act of 1916, the prime example of War Department coordinated thought for possible future action. From this foresighted action there emerged, for the first time in the history of this great nation, the evidence of teamwork between governmental and private agencies which was to prove so effective upon the declaration of war with the Hapsburg Empire.

Between the two World Wars, correlation of the legislative needs of the Army continued. In the legislative area the Army dispatched its professional responsibility better than ever before, although not without some internal opposition. The increasing good will and understanding between the Congress and the Army slowly and progressively became apparent.

The possibility of war with the Axis Nations caused anxiety within the War Department over the potential necessity for instantaneous Congressional action to ward off aggression either on the Continent or against our possessions. Fortunately, our planners were prepared with some of the initial items of legislation which put in motion the tremendous expansion of our World War II Army.

A Legislative Liaison Division

The magnitude of the legislative needs attending this enlargement resulted in the creation of a group of officer and civilian specialists whose sole task was the coordination of the maze of legislation. This group of specialists, welded into a closely knit organization, was responsible to the Chief of Staff for the processing of these legislative items from conception through passage into law. The importance of their efforts elevated them to the Special Staff level, inspiring activation of the Legislative and Liaison Division.

War Department directives summarize the Division's responsibilities as: (1) formulating, coordinating and attaining the War Department legislative program including supervision; (2) conducting War Department contacts with the Congress and its members, with the exception of matters pertaining to appropriations; (3) maintaining liaison with the Congress on legislative matters, investigations of War Department's activities, and Army matters of interest to the Congressmen; (4) maintaining liaison with other Federal and State officials and agencies; (5) clearing and coordinating all War Department correspondence and reports for the Congress; and (6) supervising the preparation and processing to the Bureau of the Budget of all War Department proposed Executive Orders and Proclamations, and the preparation and processing of the Bureau of the Budget and other Government agencies' requested reports on Execu-

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tween Congress and the Military? Here is a glimpse at history—from the Continental to the 81st Congress—from a resolution on Fort Ticonderoga to the Unification Act.

tive Orders and Proclamations.

The Course of Legislation

The Legislative and Liaison Assistants of the Army, Navy, Air Force and Office of the Secretary of Defense all work now in close unity with the President's Bureau of the Budget, the Congressmen, their assistants and advisers. From the moment of inception of a proposal in idea form, these Legislative Assistants work with the action officers in the General and Special Staff, or equivalent divisions, to present a workable proposed bill in draft; one that will best effect the desires of its sponsors. After this proposal has been thoroughly examined and coordinated by all interested Army agencies, it is approved by the Secretary of the Army and then dispatched to the Navy, Air Force and Office of the Secretary of Defense for coordination within those Departments. If any differences of opinion then exist which can not be settled among the Departments, the Secretary of Defense resolves them. After coordinaion within the Department of Defense, the proposal is forwarded to the Bureau of the Budget for advice as to whether or not it is in accord with the program of the President. Following approval by the Bureau of the Budget the proposal is directed to the Chairman of the proper Senate Committee and the Speaker of the House of Representatives for introduction to the Congress.

The President shall be Commander in Chief of the Army and Navy of the United States, and of the militia of the several States when called into the actual service of the United States . . .

U. S. Army

Lieutenant Colonel Millard G. Bowen was inducted into Federal service as a 1st Lieutenant in February of 1941, from a background as enlisted man and officer in the 29th Division of the Maryland National Guard. Remaining with the 29th, Colonel Bowen commanded one of its battalions in the landing on Omaha Beach during the Normandy Invasion.

Integrated into the Regular Army, Infantry, in July of 1946, Colonel Bowen served as Regimental Executive Officer in the 88th Infantry Division in the Morgan Line-Venezia Giulia occupation along the Italo-Jugoslav border, and with the crack TRUST Garrison at Trieste. He is now on duty with the Legislative and Liaison Division, Office of the Chief of Staff, in Washington.

Step By Step

Shortly after the proposal is introduced, the assistant or adviser to the Committee contacts a legislative assistant of the Department initiating the proposal for further information relative to the proposal's provisions. Conferences on the working level follow with briefings to the Committee adviser. Numerous reports and fact-containing memoranda find their way to the Committee during and subsequent to these conferences. Eventually the Committee members are briefed by their advisers and the bill is scheduled for a hearing before a sub-committee or the full committee. In the meanwhile, other persons in the Department are drafting statements which will be presented to the Committee by its spokesmen. The hearing may or may not last a number of days and upon conclusion, a report on the bill is presented to the House concerned by the Committee. Sometime later, it may be discussed on the floor of the House to which it was referred and even still later may be passed. Similar action takes place in the opposite House. If amendments are added in the last House to act upon it, each House appoints conference members who convene to decide amicably upon the amendments. Upon a decision, the bill is forwarded to the President and when signed becomes a law. All of the steps in this procedure mandatorily require cooperation, coordination, a will for work and a desire to attain the best result for the benefit of the nation.

Our Standing Today

Recent legislation before the 81st Congress reflects the efforts of the Legislative and Liaison Division, as representatives of the Department of the Army, to effect better understanding and closer liaison and coordination between the Congress and the Department of the Army. Out of this mountain of legislative proposals and reports appears a concerted effort on the part of the Department of the Army to better itself legislatively with a strong peacetime Army of capable officers and skilled enlisted men backed up by a well-trained and equipped National Guard and Reserve Corps, all pointed toward a possible Mobilization Day requirement.

Strength Today

In the event of an M-Day, our program for the modernization of existing laws and wartime emergency laws applicable to the Army will place us in the most favorable position of our history for a rapid expansion of the citizenry and national resources to carry the conflict to the enemy.

Congress shall have power

To provide for the common defense . . .

To declare war . . .

To raise and support armies . . .

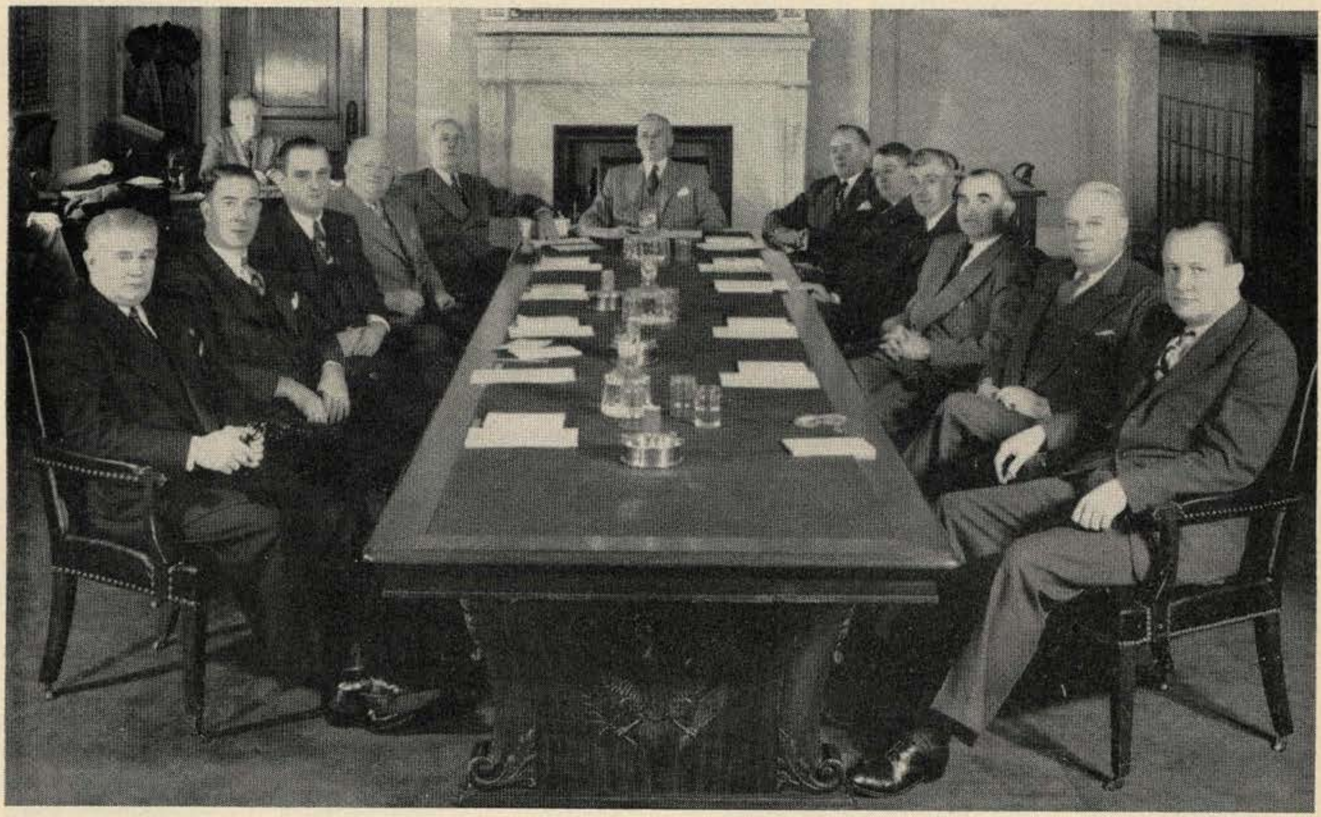
To provide and maintain a navy . . .

To make rules for the government and regulation of the land and naval forces . . .

To provide for calling forth the militia . . .

To provide for organizing, arming and disciplining the militia . . .

NATIONAL DEFENSE STRUCTURE: No. 2



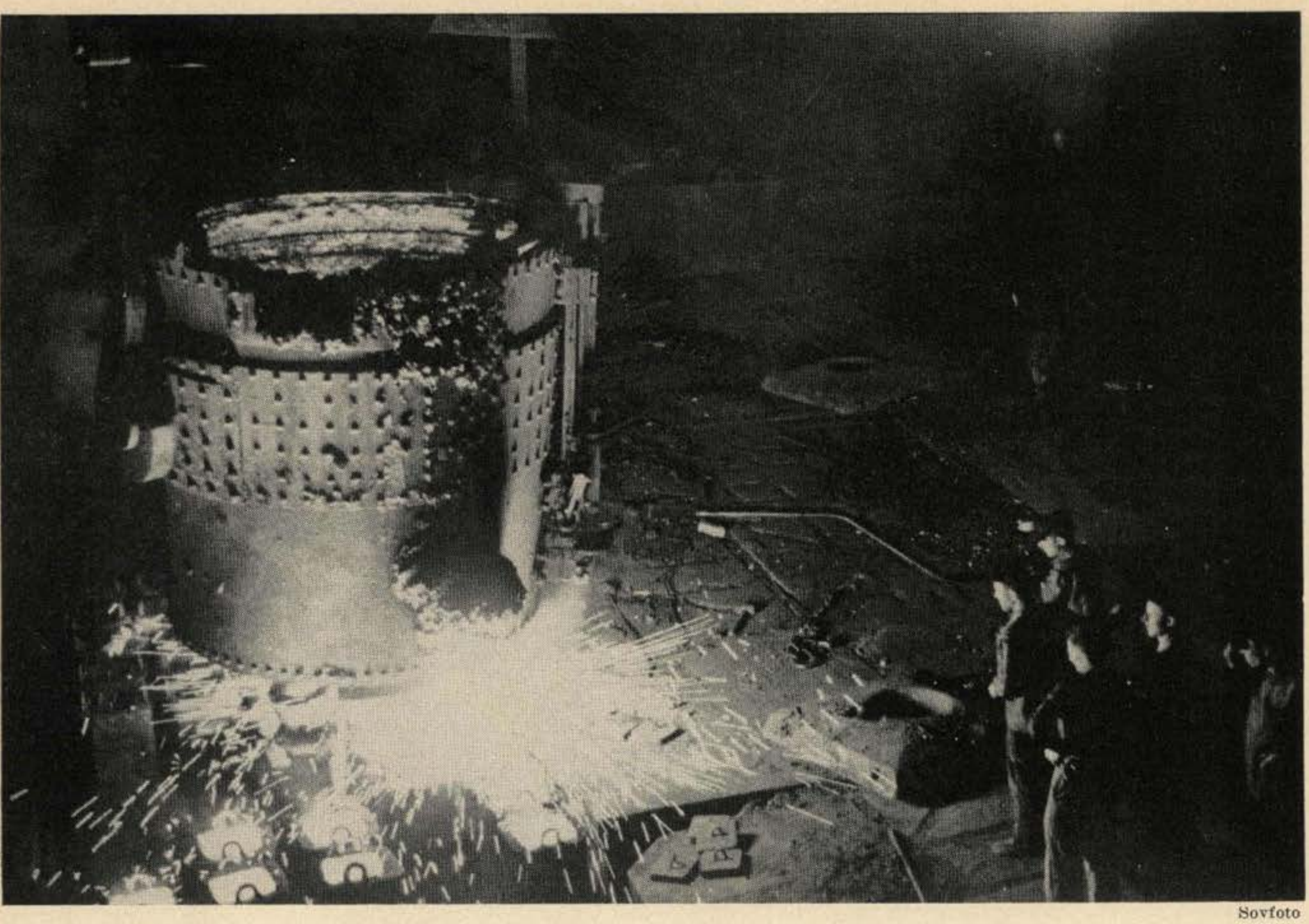
U. S. Army

The Senate Armed Services Committee

Seated around the table in the photo above are the current members of the Armed Services Committee: *L to R,* Senators Lester C. Hunt, Estes Kefauver, Lyndon B. Johnson, Virgil Chapman, Richard B. Russell, Millard E. Tydings (Chairman), *Styles Bridges, Chan Gurney, Leverett Saltonstall, Wayne Morse, Raymond E. Baldwin* (now a judge), and *William F. Knowland. Seated in the background* are Herbert S. Atkinson, assistant chief clerk, *left,* and J. Nelson Tribby, chief clerk, U. S. Capitol, Washington, D. C. Not present, Harry F. Byrd. Republicans indicated by italics.

Among the standing committees of the Senate, and important in our defense picture, is the Armed Services Committee. Appointed at the commencement of each Congress, and consisting of 13 members, normally divided between the two major parties, this is the committee to which is referred all proposed legislation, messages, petitions, memorials, and other matters relating to the following subjects:

1. Common defense generally.
2. The War Department and the Military Establishment generally.
3. The Navy Department and the Naval Establishment generally.
4. Soldiers' and sailors' homes.
5. Pay, promotion, retirement, and other benefits and privileges of members of the armed forces.
6. Selective service.
7. Size and composition of the Army and Navy.
8. Forts, arsenals, military reservations, and navy yards.
9. Ammunition depots.
10. Maintenance and operation of the Panama Canal, including the administration, sanitation, and government of the Canal Zone.
11. Conservation, development, and use of naval petroleum and oil shale reserves.
12. Strategic and critical materials necessary for the common defense.



Sovfoto

Backlight on Soviet Armor:

Russian War Industry Through the Ages

by GARRETT UNDERHILL

IN America today the tendency is to think of Soviet Russia as a newcomer to the industrial world. Officials and commentators speculate on what German engineers and scientists can do for Russia. Ridicule greets Russian claims to having pioneered many militarily valuable technical developments. News-conscious Americans—blind to the past because of an educational system which top authorities consider shockingly neglectful even of American history—seem to think that present-day Russia's war machine sprang full-armed from the brain of Stalin. Though the acknowledged purpose of the Soviets' intensive industrialization drive has always been to provide "a broad economic base for war," American popular and official interest tends to focus on Russia's basic and processing industries—not on the nature and background of the war plants and their products.

At Tula: Long-famous Gunsmiths

No less well-researched a publication than *Time* magazine recently footnoted a reference to Tula with the sentence:

"A metal-working town 120 miles south of Moscow, Tula is famous for its samovar industry."

When the samovar (tea urn) industry got started in Tula about 1750, the government armory there already rated as one of the world's great small-arms factories. Way back in 1595, Czar Feodor Ivanovich founded the basis for this armory, the Russian counterpart of America's Springfield. It was only 103 years after Columbus discovered America when he ordered thirty gunsmiths to group in a single village settlement of Tula and operate as a sort of guild. Czar Feodor Ivanovich went to Tula to get his gun makers because even then—to quote a Czarist economic history of Russia—"Tula gunsmiths were already famous."

The truth is that all sorts of metal-working—and later samovar making—grew up around Tula not primarily because of commercial demand. Metal-working started in Tula in ancient times because that was one of the two places where armorers could draw on domestic Russian iron, smelted by cold blast from local ores in little peasant-operated furnaces. Naturally the nobility and the Muscovite chiefs came to call on the technical skill of arms makers for other metals products, saw to it that they were kept busy in off-seasons for arms demand. Tula Armory itself made locks, metal ware for carriages, and countless other products—including commercial sporting arms. Out of Tula's skills and facilities came other metal-working enterprises. Thus the samovar industry centered in Tula, largely because in the 18th Century much brass was used in the mountings of muskets and sidearms.

If the conscientious military man "*. . . can gain some knowledge of the mind that creates and mans the Russian machine—tank, plane, ship, gun, rocket, rifle—almost certainly he will be a better defender of Western faith than he who just memorizes cold-turkey facts on armament, economy, organization, size of force, and tactics.*"

But the combined output of Soviet samovar plants plus the Czarist ones like the Goltiakovs', Theile's, the Batachevs', Schemarin's, the Kaprysins'—all would hardly be a drop in the bucket compared to the flood of muskets, pistols, carbines, rifles, machine guns, revolvers which has poured out of Tula since 1718. Throughout Russia and Eurasia—even in America—the arrow that is the mark of Tula (arrow-in-star under the Soviets) is far, far better known than the rare and expensive devices by which the Russians make tea Tartar-style.

The Importance of History

The fact seems to be that *Time's* footnote is symptomatic of what is wrong with many an American's approach to Russia today. It displays a remarkable ignorance of history. And Tula happens to be a particularly apt example of the degree to which the past can condition present thought and technical achievement. It is Tula's past as well as the Soviet present which compelled the great masters and designers of the ancient Armory grudgingly to stick to the 1891 Mossin rifle and the 1910 Maxim heavy machine gun even during World War II. Besides, few would dare assert that their remarkable heritage does not affect the Tula men who come from families that have worked in Tula Armory for 12 generations.

That *Time* should have gotten the wrong end of the Soviet industrial horse foremost is most remarkable. For in Czarist as well as in Soviet Russia, the tail generally wagged the dog. In the almost industry-less country of the Moscovite princes, the first industries didn't arise because of the lust for gold spurring on hard-headed bourgeois businessmen. Like Stalin's, they were created because the rulers had to have them in order to have arms for war.

Russian industry really started when expansionist-minded Czar Ivan III (strong-minded like Stalin) wanted to build up his army and furnish it with the latest "secret weapons" of the day. There was practically no domestic industry he could call on. The busy trading center of Novgorod had some handicrafts, and an iron foundry—but that was about all. What official facilities did exist were centered in Moscow. To this capital—then only a principality—Grand Prince Vasili Vasilievich (1425-1462) had brought the best technical help available. Interestingly—in the light of what the Soviet Navy has done—he had brought to Moscow Italian artisans, including Aristote of Bologna. For the Italians in that day were thought by many to be foremost in the new art of gun-making.

The Russians themselves hadn't been asleep, though. Chronicles first mention gunpowder in Western Europe at dates like 1331 for Germany, and 1345 for England. King Richard II seems to have used about 400 mortars or cannon against the French in fortified St. Malo in 1378. Moscovites definitely used cannon to repulse the Tartars' assault against the Kremlin in 1382. Dmitri of the Don used gunpowder in the field in 1389 (in World War II his name was given to a brigade of T-34 medium tanks). And when Czar Ivan III used cannon against the Swedes in 1482, he anticipated Swedish use of firearms by three years.

Russian Gunmindedness

Czar Ivan III appears to have created that gun-mindedness which has characterized the Russian military mind through the centuries—and which today is exemplified in the Joseph Stalin heavy tanks and practically the whole line of Soviet armor. Bringing in a new batch of Western artisans through the medium of maritime Venice, he set up the Liteiny Dvor (Foundry) on Moscow's Neglinnaya River, some years before an Italian from Genoa landed on San Salvador island in the West Indies.

"Ivan the Terrible" (Ivan IV, 1547-1584) is significantly a hero of the present Soviet regime: he favored strong central power, a big army, imperialism—and a strong artillery. Under him, a big growth in artillery plant took place in Moscow. Not less than 2,000 cannon were stored in readiness there. In 1576, around 3,000 cannon had been produced—but they did not win the "Dread Czar" the territory he wanted on the Baltic coast. When it came to clashes against the Swedes and Poles, Russia was still "backward."

The fact was that industrial effort was not based upon business enterprises convertible to war. "Heavy industry" was built for munitions work. Factories were state-owned, artisans state workers. Under Ivan the Terrible began the trend which made native Russian workers the actual property of the state. In 1570 Ivan discouraged the development of free private enterprise when he sallied forth against the independently minded merchant city of Novgorod—where for five weeks his *oprichniki* (sort of regular army) amused themselves by torturing the population and drowning them in the Volkhov River.

Nevertheless, the cannon turned out were very good jobs indeed. The 38-pounder (refers to projectile) Medved cast in 1590 was as well-made and as fancy a piece as was ever turned out in Western Europe at that time. Even then Russians liked things big and powerful. The contemporary counterpart of the big 122mm gun of the Joseph Stalin tanks was the great Kremlin gun cast by Andrew Tchkov. A 36-inch gun, it had a weight of 97,500 pounds. Its projectile—a stone ball—weighed 2,500 pounds. It took 500 pounds of powder to fire it.

Ores and Iron Works

Around the end of the 1500's and beginning of the 1600's, Russia's main weakness was that the best iron ores were brought through the Arctic port of Archangel by Dutchmen who got them from Russia's potential rival for the Baltic—Sweden. Exploitation of local ores by small, peasant-operated cold blast furnaces had previously been the rule—around Novgorod, Tula, and Olonets. To correct this bad strategic weakness, a Dutchman named Andrew Vinnius was induced by the Czar to set up a modern iron-casting works at Torokhovo (only 15 versts from Tula), in 1637. Meanwhile the Czars had made efforts to exploit the vast deposits of Urals ores, smelting them with charcoal made from the tall Siberian firs. Thus in 1631 an iron works on the Nitsa foreshadowed the great ore-to-tank industrial combines of Nizhi Tagil and Sverdlosk.

It was just at this time that the Dutch were starting their colony on Manhattan; the Puritans theirs at Boston.

In the 1600's the Army itself was pulled up by foreign aid. Because the nobles hadn't really cared about decent arms and training for the levies they had had to provide, in the 1500's the Czars organized the Streltsy—which at last got small arms. Most were arquebusses from Tula and the gunsmiths gathered around the Imperial Court at Moscow. The Streltsy lived home, and were in no shape to meet Western forces.* So regiments were formed of Russian recruits, officered by foreigners and trained along foreign lines. In the last quarter of the 1600's, there were 63 such regiments, infantry and cavalry—or about 60% of the Army (Cossacks excluded).

Early Naval Efforts

At this time an effort was also made to create a fleet. Western shipwrights built one warship—the *Orel* (Eagle), which unfortunately got burnt up during the peasant uprising of Stepan Razin. Numbers of studies on warfare and science were translated into Russian, to aid the native military and industry.

Sovfoto

T-34 Mediums in a Urals assembly shop.

Despite all this, industry and the military art failed to flower in Czarist Russia. It took Peter the Great (1689-1725) to make a real effort to put Russia on its industrial feet. He worked as vigorously as Stalin at creating an industrial base for war, at expanding and furbishing up his military, and at the dangerous game of imperialism and conquest. (The turning point in his wars with Charles of Sweden was at Poltava—not far from Stalingrad.)

In those days artillery and small arms were the main and only weapons. Peter found that the Tula gunsmith guild had been idling away their time, turning out guns at home in a comfortable manner. In 1718; under English direction, a new stone armory was built; the machines for boring and finishing were run by water power.

Under Peter Tula turned out as many as 20,000 muskets and 10,000 pistols a year. Later, in 1795, the new US armory at Springfield was to produce but 245 firearms. And when the US Army in 1798 contracted for but 40,000 muskets, all US resources couldn't give delivery in 10 years. At that, the workmanship on these American pieces was "extremely poor"; resulting in many being sold as surplus. In 1850 Springfield managed to build just over the 20,000 muskets and musketoons Tula had done over a century before.

An Interesting Comparison

Tula's history is an interesting commentary upon American and Russian relative positions today. Tula got a big reorganization under Catherine the Great (1780)—another Russian imperialist. It got another shot in the arm in 1817, when British aid was again brought with British tooling to substitute stampings for forgings on many musket parts. Expanded and reorganized again in 1873 with new Jonval water turbines and British steam power (in case the river should be in flood), a complete mechanization with foreign tooling enabled Tula to turn out about 137,000 guns a year during 1877-1881. At that time Sestrovetsk Armory (founded by Peter in 1721 north of what is now Leningrad) was doing about 70,000.

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*The influence of history even in small military details is evidenced by the Bolshevists' using features of Streltsy dress when dreaming up a new uniform after the 1917 Revolution.

Izhevsk Armory, started in the Urals in 1817, did over 168,000. Thus the three Czarist armories had around 1880 a maximum output of 375,000 rifles—which compares with Springfield's Civil War peak of 276,000 muskets and rifles. Incidentally, the models the 3 armories were producing were Russian versions of US General Berdan's rifle. Tula was also making the Gatling guns.

The three armories were souped up again in the 1890's to undertake production of the 1891 rifle—recently given a new lease on life as the 1944 carbine. And yet for World War I the Russians signally failed to meet basic rifle needs.

Outside Aid

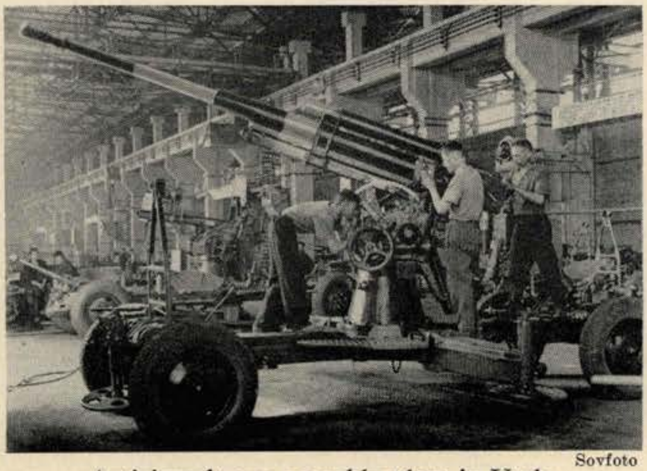
Despite importation of foreign technicians and machinery, many queer paradoxes existed in Russian small arms production in the 1700's and 1800's. Until plant facilities for casting steel were expanded at Izhevsk in 1872, Tula, Sestrovetsk, and Izhevsk Armories had to import barrel blanks and rough-forged receivers. Peculiarly, these came mostly from Russia's potential enemy —the Austrian Empire.

The fact seemed to be that Peter's attempts to organize a broad base in the metals industry failed, despite frantic efforts to obtain foreign aid for his artillery and Navy. He hired another Dutchman—de Henning—to run the Olonets iron mines and works east of Lake Ladoga; they had fallen into a "ruinous state" since they had been operated by a Dane around 1670. Henning ended up a general in charge of all the copper and iron metallurgy and mines in the Urals—for under Peter such affairs were under artillery jurisdiction and control. It was in 1725 that Peter commissioned the Tula gunsmith Demidov to start iron works at Nizhni Tagil (New Iron Mine) in the Urals—over 200 years before Stalin opened the new works to build tanks and guns for the Red Army.

The Demidov family did famously with their great Urals concessions. Nevertheless, native Russians didn't rush to enter the engineering trade. Towards the close of the century, the Olonets cannon factory was in charge of a Scotsman who got 30,000 rubles a year to build what other foreigners termed "high-quality artillery."

Russia in the Lead

Indeed, around the turn of the century Russia was—despite political muddling after Peter—ahead of Europe in production of pig iron. About 1820, Russian pig iron production was 1½ times that of France, 4½ times that of Germany. British observers with the Russian forces on the Friedland campaign noted the size and quality of the Russian artillery arm Czar Alexander used against Napoleon. They considered it noteworthy that development of artillery in Russia did not appear to have been harmed by social prejudices against such an "unclean" arm, such as were common in Western armies.



Sovfoto

Antiaircraft gun assembly plant in Urals.

With the coming of the industrial revolution, developments popped up in Russia just about the time they cropped up elsewhere. Baird's factory in St. Petersburg (a foreign-capital venture which grew into the Russian Navy's Krondstat and Izhora machine shops built its first Watt steam engine in 1790. Robert Fulton made history when he sailed the Hudson in the *Claremont* in 1807; Baird's built the first Russian steamboat—the *Skory* (Swift)—in 1813 at Izhora. When Izhora helped build the first Soviet tank, it had thus been in the machine business for 130 years. Sormovsk—another plant which failed to produce reliably functioning tanks in 1920—dated as a very active steamboat building firm from somewhat after 1825 (it built railway rolling stock after 1893).

With the Industrial Pants Down

The Crimean War caught Russian industry with its pants down. If Russia was going to have the Navy it needed—with all the steel and machinery-producing facilities a fleet implied, much would have to be done. Thus, as a Czarist history puts it, ". . . the Imperial Fleet was the means of raising the level of the metallurgical industry in Russia. . ." In the Crimean War, the Imperial Navy also found it couldn't go about drafting auxiliary cruisers by converting merchantmen. After the shooting stopped, it had first to set about the creation of a merchant marine and the necessary industrial backing, right down to the basic steel plants.

Steel making had not been totally backward, however. But the start in high-grade steel casting and working was made with craftsmen imported from Germany's famous high-quality steel center—Solingen. The Russian center at first was at Zlatousk in the Urals—where demands for top-quality swords, lance tips, and bayonets created a government armory in 1816. Here, however, top quality was attained only when a native Russian—P. P. Anosov—took over management in 1828.

Today Zlatousk steel men claim that they are the only ones to have rediscovered the art of making true Damascus blades. They still make bayonets, sabers, etch portraits of Lenin and Stalin on fine steel plates, suitable for hanging in warship wardrooms or in officers' clubs. For 100 years they have felt that they can outmatch the quality of Solingen steels.

Obukhov: Figure In Steel

A far more outstanding figure in steel than Anosov was Paul M. Obukhov, who also got his start at Zlatousk. He introduced large-scale casting of crucible steel for cuirasses (body armor for cavalry) and swords in 1851. Applied to artillery, this technique produced a cannon which in 1860 fired 4,000 rounds—and still remained serviceable.

Obukhov's achievements at Ziatousk led the Army to sponsor a big iron and steel casting works factory near Perm, close to the Urals. Poor Obukhov seems to have been a good steel man—but no empire builder. He had little to do with the results of his work, for it was Vorontsov who in 1863 built and operated this great gun factory, not far from the Army's Kamensk arsenal (a cannon plant started by Peter in 1701).

So Obukhov got private capital, set up in a newer, finer plant outside St. Petersburg (Leningrad). Here in 1868 Obukhov introduced mass cooling. Later Obukhov himself got frozen out. Though the works kept his name, it became a government factory for cannon and projectile production. A top-rung plant, it was the development center for Russia's iron and steel industry. It checked the work of other plants.

All in all, at the turn of the century the Russians had the following artillery-producing factories:

Government:
  Obukhov (1863)
  Perm (1863)
  Kamensk (1701 converted to steel 1860-70)
Private (all St. Petersburg):
  Putilov (about 1825 as Kirov started heavy tank manufacture in 1939)
  Alexandrovsk (1825—smaller than Putilov)
  Franco-Russia (1790 eventually went to the Navy)

These plants did other metal work—including railway cars, rails, locomotives, etc. Putilov was comparatively big, did little artillery in the 1800's.

The small-arms armories were:

Tula (1595)
Sestrovetsk (1721)
Izhevsk (1763; guns in 1817)

In off-years, these armories made sporting arms. Tula made miscellaneous metal goods, including tools, for military and civil use. There was virtually no commercial small-arms production.

Coal Sources

Though industrial development was so closely watched by the Russian military, steel making in the St. Petersburg area around 1900 (and that meant three of the four artillery plants) relied on English coal. And England was then readying a treaty with Japan, in fear of Russia's menace by sea and land!

Exploitation of rich Russian coal deposits down in the Donets basin started in the late 1700's to get fuel to warm the wooden Black Sea Fleet. In 1797 the Lugansk Iron Works was built there to use local coal for smelting local ores, and to provide an iron supply for Black Sea fleet construction. Not till England's John Hughes was hired by the Czar in 1869 did the Russians succeed in getting a blast furnace to make pig iron out of Donets coal. Contrastingly, in occupied Poland—which Catherine the Great had seized and divided up with Austria and Germany—many small plants around Warsaw were successfully using coal and hot blast to make iron as early as 1833.

When Hughes succeeded in using native Russian Donets coal to make iron, the focus of Russia's iron and steel industry swung away from the charcoal-using Urals plants. By 1870 Urals bureaucrats and official industrialists had become quite indifferent to progress. Then an Austrian metallurgist named Tunner was astounded to find that the Urals plants failed to make use of any hot blast in smelting iron—though the date was nearly 20 years after Obukhov had surprised the world with his pioneering in steel metallurgy.

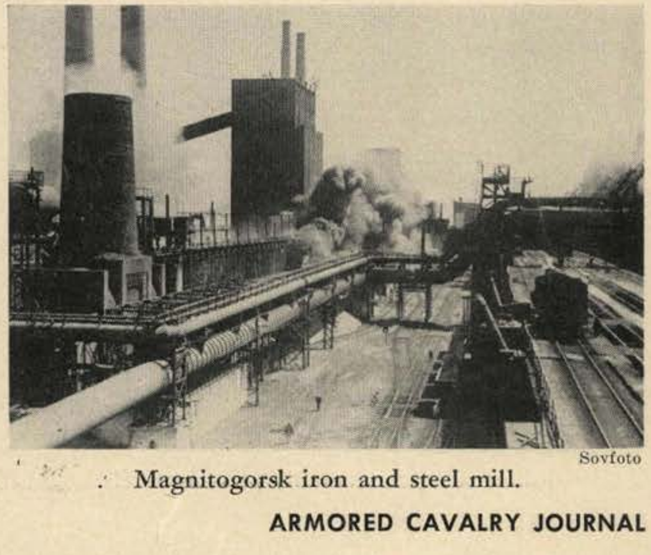
The Foreign Influence

Despite attempts by officialdom to build up native talent, in 1890 technical management staffs of the outstanding Russian industries still had a proportion of 1 foreigner to every 2 Russians. This was over 400 years after Grand Prince Vasili Vasilievich had brought Italian artisans to Moscow.

Around the turn of the century, application of commercial technology brought about new advances in artillery in Western Europe. As a result, the Russian Army again found itself behind the industrial-technological eight-ball. Back in the 1870s, when results from Obukhov's steel casting were coming in, it had done OK in domestic gun plants. Light and medium field artillery, up to pieces as large as the 107mm M1877 and 152mm guns, had tended to supplant and surpass the 120mm M1878 and the 155mm M1877 built by France's St. Chamond and Schneider. The line of Russian-designed non-recoiling medium (to the Russians, heavy) guns was climaxed by Markevich's 152mm M1904 gun, as built by the Obukhov plant.

But introduction of recoil mechanisms for faster fire meant that Russian industry had to hump itself, master the new advance—and get set to produce a new line of gun goods. In light artillery, this was done almost at once. Putilov turned out its first recoiling 76 in 1900. The improved 1902 Model established itself as the best light field gun in World War I—superior to the overrated French 75 of 1897, and far, far better than the short German 77 of 1896.

Despite a fast start on the light field gun—and a very poor showing in the Russo-Japanese War of 1904-5, the Army was in no hurry to launch a new artillery program. The 1905 Artillery Committee sat until 1909 before taking on military members, then set out a program in 1910. To the disgust of native Russian talent, officialdom again went abroad. This time they tried both Krupp and



Sovfoto

Magnitogorsk iron and steel mill.

Sovfoto

Krasny Proletary Machine Tool Works.

Schneider for models of "intermediate," medium, and heavy guns and howitzers. Even for the new mountain gun a Schneider-Danglis design was adopted.

Late Start In Artillery

Putilov got the manufacturing program, which eventually favored the Schneider line—most pieces being built in Russia on license. But with so late a start in medium artillery, heavy artillery (152mm guns, 203mm and 280-mm howitzers) wasn't scheduled till 1915-16. Such big pieces were the worry of the Obukhov plant, which was used to building big guns for the Navy. But since Obukhov's facilities were overtaxed by demands for naval guns for the fast-expanding 3-ocean Navy, it didn't get around to a 305mm howitzer till the M1915.

On the Naval Side

Around 1900 Obukhov employed about 3,000 men, and usually had in hand some 800 guns. The pay scale was from 25 cents to $2 a day. At the turn of the century Obukhov had produced the majority of the guns in the Russian Navy—which then rated as the fourth largest in the world, and bigger than the U.S. Navy. Almost all the other guns came from Canet—a French firm associated with Schneider. Obukhov guns at this time were actually simplified, stronger Canet models. Their power rated somewhat under that of the French originals. Guns built included battleship big guns of 12-inch, and secondary armament of 10, 8, 6, and 3-inch caliber.

Before World War I, Obukhov was fitting dreadnaughts with long 48.2-ton 12-inch guns. For the design of these ships the Russians went right to the originator of the dreadnaught idea, the Italian General of Engineering Vittorio Cuniberti. Actual construction of all but one of the new battleships was supervised by John Brown & Co.—later builders of the *Queen Mary* and *Queen Elizabeth*. Construction of the other ship was coached by Vickers of England.

Before the Russo-Jap War, the Russians tried Cramp's of Philadelphia for one, and France's La Seyne for another of their 23-ship battle fleet of 1904. As of that date, French design was in favor. In the 1880's and '90s, design had favored the British, with British firms supplying engines for some of the ships.

From 1890 right up to World War I, Germany's Schichau Yard was favored for design and samples of fast light cruisers and torpedo craft. The Russians tried not to miss a trick by also trying out England's Yarrow and Laird's, France's Norman. Ziese, chief of the Schichau firm, also owned a Russian destroyer-building yard at Reval. At the same Baltic port destroyers were built by the Russian Company (in which France's Schneider-Creusot and Germany's Vulkan Yard had an interest), and by Lange-Becker (associated with France's Norman Yard). At this time Putilov's shipbuilding affairs were hooked up with Blohn & Voss (later to build the blue ribbon liner *Europa*) on cruiser construction; while for destroyers they got designs and A.E.G. turbines from Vulkan. Today Schichau is fully in Russian hands; this Danzig yard, which built U-boats in World War II, lies behind the Iron Curtain.

Just as the Army swung to France's Schneider a few years before World War I, so the Navy swung to Vickers. Obukhov therefore shifted towards a British basis for Naval and coast defense guns—for in Russia the Navy has always been charged with coast defense.

Obukhov was scheduled to work on Vickers' 14-inch (356mm) guns for battleships started in 1914. By then Japan had already armed her first ships with the Vickers 14-inch pieces and her Muroran steel mills were making the tubes for homemade specimens, while Kure Navy Yard made the breech mechanisms. In America, the Washington Naval Gun Factory, Midvale Steel, the Army's Watervliet Arsenal, and Bethlehem Steel had turned out quite a fair number of 14-inch guns for U.S. dreadnaughts. Britain's Elswick and Germany's Krupp had 16-inch guns in their export catalogs, while the British Navy was introducing 15-inchers.

Home Ideas

Obukhov did not copy slavishly. The Russian Navy and Army had their own ideas on gun design. In general, pieces designed abroad to Russian specifications had a Russian-look. The Navy had some outstanding long-caliber high-velocity guns on the destroyers built just before World War I. These 102/60's were proportionately longer than any of the world's standard naval guns. And while the Navy took French Navy calibers for some of its armament—calibers preserved today in the Navy's Vickers-type 130/50 so widely used in World War II destroyers and coast defenses, and in the powerful 100mm guns—Russian ordnance men again insisted on outsize length. This 100mm caliber later cropped up in the Army during World War II, when the high-velocity anti-tank corps artillery 100mm gun showed up on a split-trailed and on an armored SU 100 self-propelled carriage (T-34 tank chassis).

In the Air

Before World War I, the Russians readied for air war. The Navy had in service a 76/30 dual-purpose gun, and was starting on a 100/47 (both still used). Making an effort to build up Russian talent, Izhora built in 1914 a dirigible called the *Albatros*. Sikorsky—now America's plane and helicopter genius—built a four-engined 16-passenger plane, and the government scheduled ten more. Ninety smaller Sikorsky biplanes and monoplanes were projected. For immediate strength the 1914 program for 330 new planes called on France. A few samples were acquired from England and Germany. America's Curtiss was favored for seaplanes. In 1914, Russia's land and sea air strength was rated at 500 planes. Germany and France were rated at about the same strength, with England having about 250 serviceable ships.

Yet when World War I came, Russia fell down dismally on the production of small arms, artillery, ammunition. For aircraft and motors she relied almost wholly on foreign sources. Vital medium artillery had to come from France and Britain. Heavy artillery was almost totally lacking. Russia's artillery arm, which looked sizable in her peacetime standing army, dwindled away because a miserably managed war economy failed to produce either replacements or new pieces for the expanded forces. The Russian armories did build up considerable capacity for small arms—but the Revolution came before the effect could be felt.*

Corruption

To no small extent Russia's parlous condition in arms was due to downright crookery. Dishonesty in Russian supply services by World War I was so time-honored that it lasted into the Soviet regime. Right during the all-critical Battle of Moscow in 1941 Soviet Quartermasters were thieving government property and selling it right and left—though most troops were in wretched condition, and supplies critically short. Just before World War I Putilov was involved in a terrible scandal over arms contracts. Almost undoubtedly the Czarist government's fondness for foreign aid was often based upon the chance to make a buck from foreign firms anxious to get a fat contract.

But foreign firms investing in Russian enterprises found that neither private nor official Russia was exactly eager to give foreign suckers an even break. Much has been written by historians about the rapid rise of capitalism in Russia in the decades before the First Great War. Little is said about the sad experiences many foreign capitalist investors had in a nation where monopoly capital teamed up with corrupt bureaucrats. "Poor Little Belgium"—a wealthy manufacturing nation before World War I—sank considerable funds in Russian industries—streetcar lines, samovar factories, even a much-needed cartridge plant. A veteran Belgian industrialist, reminiscing over that era, recently remarked that there seems to be a distinct similarity between the attitude of the Czarist and the Soviet Russians toward foreign capital. Russian interests and officials in Czarist days tended to a short-run view, and did foreigners out of capital. As a result, the Belgians soured on Russia before the war.

It is noteworthy that the Soviet Russians have become increasingly cavalier about buying samples—perhaps even plans and licensing contracts—then not bothering to make a full accounting, if any, on articles produced. Indeed, the run-around the Belgians and others got in Czarist days was nothing compared to the treatment given foreign enterprise by Soviet officialdom.

Disregard of Patent Rights

An example is the way the Soviets got American aid in getting peep sights for the thousands of TOZ .22 rifles furnished to defense societies for target practice. The Russians chose America's Lyman sights. Official publications openly refer to them as Lyman sights, and they are clearly Lymans to the eye. But all the Soviets did was to buy a few samples from the manufacturer, take a few descriptive folders. Till 1947 the Lyman firm never knew that their sights were probably fitted to more Russian than American rifles. They didn't even get a four-color portrait of J. V. Stalin and a letter of thanks.

And had Walter Christie received a mere $5 for every Christie-type tank the Soviets built, he would at least have lived out his life on a comfortable stipend—not died in comparative want. Had the American tank genius had such a living, he might well have conceived of a new tank suspension which the Soviets might find even better than the Christie type they use on the present-day T-34s, T-44s, and SU 100's.

Neither the Czarist nor the Soviet attitude would appear to foster good will—to afford the Russians their best chance of picking foreign brains, and combining foreign experience with the Russians' flair for military pioneering. Indeed, their attitude towards foreign business would seem to recall Bret Harte's "heathen Chinee," who was peculiar "for ways that are dark and tricks that are vain." In the poem, the poker-playing Chinese ended up by being too smart for his own good—a feat which Stalin himself would seem to have duplicated when he signed the Soviet-German pact in 1941.

The Perspective of History

No man can escape his past; neither can a nation. However hungry the American public and American officialdom may be for news hot off the Soviet griddle, it seems certain that nothing that goes on behind the Iron Curtain can properly be understood unless it is related to its background—to the physical and mental factors which have conditioned the people and things connected with it.

Even the facts contained in this cursory review of Russian war industry prior to World War I would suggest that the most important thing about Russian armament and military technology may well be the character of the people behind it. For how is it that, despite repeated efforts over the course of hundreds of years, so many advances in war technology leave the Russians behind the technological-industrial eight ball?

The Navy, for instance, called in foreigners to found cannon back in Peter's day. Introduction of steel found Russia having to scramble to get the industrial capacity to build both ships and guns. Then came fire control—for when the British-equipped Japs outranged the Russians at Tushima, it became apparent that still another industrial effort was necessary to keep up. And when the Soviets finally had some excellent optical fire control in service just before World War II, up come the Westerners with radar fire control, which afforded such an advantage that in 1945 a squadron of U.S. destroyers probably could have taken on the entire Black Sea Fleet.

On land, Soviet Russia got caught out by the advent of atomic warfare—a development which demanded of Russia another hasty and immense industrial project. Even some of her own prewar military pioneering backfired. The Red Army started airborne troops, but lacked the airlift and radio equipment to make battle use of masses. She got the jump on most in rockets, but had to get vast amounts of rocket propellant via Lend-Lease. She was ready for biological warfare—she boasted—before the war, in 1938. Yet American efforts after the 1942 Roseberry-Kabat report indicate that America had greater BW potentials, especially as to dissemination by long-range aircraft.

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*America was in a similar fix. To help out Russia, American industry built up by 1917 a capacity of 1,500,000 Model 1891 Mossins a year—but was able to deliver few before the Reds took over. Interestingly, Springfield and Rock Island armories together built only some 300,000 Springfields during 1918. By then Tula's capacity was several times that figure.

Lack of Know-how—Not Ideas

Back in 1899 the British naval authority F. T. Jane suggested that it was not lack of ideas which kept the Russians from developing remarkable military potentials. In the museum at Krondstadt he noted some naval devices of exceptional novelty and interest. He was told that the Russian Admiralty was loath to standardize on such new devices—lest they attract the attention of foreign nations better fitted to make and use them than the Russians.

The facts in this survey seem to suggest that America still needs to become more conscious of the *military* end of Russian industrial activity—and to fathom the singular pecularities of technological and industrial conditions which appear to derive from the hind-end-foremost state of Soviet industrial affairs. For when responsible *Time* would characterize the greatest small-arms town in the world—one that has built more guns than any other locale, except perhaps Liege—as a ". . . metal-working town . . . famous for samovars," America's blindness must indeed be acute.

Knowledge of what has gone before would no doubt also affect what are often widely held beliefs—but which would in fact appear to be based upon superficial observation.

Since it is often easier to see the mote in another's eye, ground force people might well consider the effect of historical background on a naval matter. And naval matters should not be overlooked by Army men: after all, it's their sister service which has to get guns, tanks, and troops to theaters of operations and keep them supplied.

Back in 1947 when he was Navy Secretary, Mr. Sullivan asserted that we have to fear an expanded Soviet submarine fleet, which will use the four German U-boat yards in Soviet hands, capitalize on German technicians, and make use of captured stocks of parts for "schnorkel" fitted, high-speed underwater Type XXI submarines. His assumption was plain: the Russians, like the U.S. Navy, are much taken by ideas incorporated in the German U-boat that never really got into service. America should therefore be scared to death of a German-aided Soviet Fleet that has "operating five times the fifty submarines Hitler had at the start of the war."

As With Armor

The briefest research would indicate, as one might expect from the story of Soviet armor, that the Russians were right up front when the curtain went up on submarine development. The Russian Navy bought its first power-driven true submarines in 1881. The U.S. Navy first got interested in Mr. Holland's schemes in 1887. Britain waited till 1900 before going in for subs—when the Royal Navy went Holland, too. When the mystery engineer D'Equevilly got Krupp's Germania Yard interested in building a submarine in 1902, it was the Russian Navy which bought what turned out to be the prototype of a long line of ocean sharks. And Russia bought three more of Krupp's subs before fork-whiskered Tirpitz in 1905 deigned to order Germany's first U-boat.

Missing no tricks, the Russian Navy had meanwhile bought two subs from America's Simon Lake (with wheels to run along the sea floor). It also bought aid from the best—from Holland's Electric Boat Company, from whose Groton Yards were later to come the world's finest submarines, the ones that doomed Japan.

But simultaneously Russia was building boats at home to native designs. Bubnov started a line of his own in 1903, while Drzewiecki (a Russian Pole) distinguished himself by being one of the very few contemporary designers to make original contributions. The St. Petersburg (Leningrad) yards by 1910 had a good start on Krupp Germania. By the outbreak of World War I, Russia's sub fleet was stronger than Germany's—on paper.

Between wars, the Soviets duplicated with submarines what went on in armor. The German and Soviet "orphans of Versailles" teamed up on submarine development perhaps to an even greater extent than they did on tanks at the Kazan center. Around 1933 there were launched in Leningrad three boats which obviously were the prototypes of the German Type VII U-boat so widely used during World War II.

From Italy

But the Russians didn't favor German design—and it wasn't because the Germans got to be fascists. Again the Russians went to Italy, for in the between-wars period the fine hand of Italian craftsmanship was turning out excellent speciments of naval architecture and engineering.

Quicker than a muzhik can say "Emanuele Filberto Duca D'Aosta," the Red Navy turned out some submarines to designs by the Adriatico firm. This was in the mid-1930s; Russian sub design has been very Italian since then. And rightly: the Italians design and build excellent boats.

In the mid-1930s the Red Navy got French help on some big destroyers, but for the rest of its modern destroyers—the Gordys and Ryanys—it went to Mussolini's Odero-Terni-Orlando, of Leghorn—where the hats come from. Red sea dogs even bought a whole big destroyer from O-T-O.

The Russians must have liked the Italians' line of maritime goods very much indeed, for since World War II they have made every effort to get hold of the Italian warships which were assigned Russia in the days when the Soviets and the Allies were friendly. Indeed, Russia turned in the old Lend-Lease cruiser *Milwaukee* to get the O-T-O-built *Emanuele Filberto Duca D'Aosta* herself. They turned in Britain's Lend-Lease battleship *Royal Sovereign* to get the Ansaldo-built Italian *Giulio Cesare.* Ansaldo of Genoa had supplied the design for the only modern Russian-built blue water ships Stalin has —the big *Kirov* class cruisers.

Under the circumstances, it by no means follows that the Russians will go all-out for German-type submarines, just because the design and facilities and technicians are available. The mass-production design of the late German U-boats, suited to Germany's wartime economic straits and emergency conditions, might well hardly appeal to minds accustomed to eye the world market, then select the best. Accustomed to building ships that last, the Russians would hardly seem the ones to utilize—as has been reported—parts intended for Jerry-built U-boats intended for short wartime life. Certainly the French and Americans have been having terrible trouble with breakdowns in their sample Type XXI boats.

And can it safely be assumed that the Russians, famed for decades for their extremely nosey naval intelligence service, overlooked the Dutch and British experiments with "schnorkel" breathers which temporarily ended in 1940? For the U.S. Navy's failure to take up this old idea before the war's end was intentional, not due to ignorance.

Can it be assumed that the Russians agree with German and American tacticians, that high-speed breakaways after firing torpedoes are worth considerable sacrifices to get streamlining and to allow for extra space for storage batteries? Certainly the Obukhov 180/57s on the *Kirov* cruisers show that the Russians don't follow foreign *thought* slavishly—for most navies use 6- or 8-inch guns on such ships.*

Plainly neither the schnorkel breather nor high-speed-underwater features require backing by special industries. Both are technical modifications. Indeed, back in 1916 the British built a sub that had enough batteries to power motors giving an underwater speed within 2 knots of that attained (on paper) by the fabulous German Type XXI. It must be remembered that, so far as such purely engineering modifications and tactics go, it was Russia which produced in the *Karp* the first mine-laying sub. So there is no particular reason why Russians shouldn't have gone in for Type XXI modification some years ago—for they don't have to behave like Americans.

When officials cite horrendous figures like 250 Soviet submarines (some oracular columnists "close to the inside" in Washington have gone the whole hog, and credited Stalin with 250 to 300 Type XXI's), they should in all fairness to themselves and to the nation give other facts as well.

Just before World War II, Red Navy Commissar Kusnetsov boasted: "The Soviet Union possesses more submarines than any country in the world, considerably more than Germany and Japan put together." Russia thus was in an even more favorable submarine position on the outbreak of World War II, than she was at the start of World War I.

Why, then, did we not hear more of Russian submarines—especially in World War II? How come Stalin's subs didn't slip torpedoes into the German U-boats and surface units that cruised off Norway to threaten Anglo-American Lend-Lease convoys on their way to Murmansk and Archangel? How come British, not Russian subs, nailed the *Tirpitz* in its fjord hideaway? How come that the Germans after 1941 could use the Baltic as a Navy training area and highway to Kiruna's ore docks, after the German Navy reported proudly: *"Die Ostsee ist leergefect vom fiend. . ."*? (And after all, Hitler's little fleet was then also dealing with the sea might of Britain.) How was it that the Germans so easily repeated in 1941 the classic Dago and Osel amphibious operations of 1917? And how was it that, in the Black Sea, the Axis was able to evacuate such quantities of troops from the Crimea in 1944?

When the laurels won in World War I by the four British E-boats that slipped into the Baltic are compared to the achievements of the Russian subs there (Verderevski had 64 subs in service at the end, 18 as big as the British craft), one gets a gnawing suspicion that Russian capabilities in the U-boat line are not accurately to be reckoned by bare statistical and technological rationalizations along Western thought patterns.*

Necessary Backlight

The same may be said for ground and air forces, tanks and planes. No detail of them—and certainly not the overall—can safely be considered without some backlight from history. To judge from the Soviets' recent frantic efforts to associate themselves with the past of Czarist Russia—to show that Soviets or Russians really pioneered every worthwhile technical or military development, this backlight probably will prove more essential to proper perspective of understanding as time goes on.

Though armor is almost entirely a Soviet development, it too has its roots deep in Russian history. It is seemingly Czar Ivan III's artillery-mindedness on caterpillar tracks. Proper understanding of it can never be gained without probing into the Russian soul.

Since Russian intellectuals have been doing that without conclusive result for centuries, the row the conscientious military man must hoe is hard indeed. But if he can gain some knowledge of the mind that creates and mans the Russian machine—tank, plane, ship, gun, rocket, rifle—almost certainly he will be a better defender of Western faith than he who just memorizes cold-turkey facts on armament, economy, organization, size of force, and tactics.

But if, like Hitler (a Western Front man in World War II), military men give only superficial consideration to Soviet military matters, instead of burning the midnight oil, trying to get the "feel" as well as the facts; if they duplicate the military provincialism of the post-1918 French when preparing against the refurbished German forces, and think of the Russians as if they thought and acted like Americans, and had American backgrounds—then almost undoubtedly such men will be more of an asset to Stalin, than to the cause of Western civilization.

The thing to bear in mind when studying Soviet arms is not statistics on the number of divisions, planes, tanks, schnorkel subs. The thing to keep posted as a guide is very apparently good old Paragraph 98 of the U.S. Army's FIELD SERVICE REGULATIONS: OPERATIONS:

"Man is the fundamental instrument in war; other instruments may change, but he remains relatively constant. Unless his behavior and elemental attributes are understood, gross mistakes will be made. . . ."

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*180/57's—also used ashore in turrets and on slick railway carriages, are 7.1-inch guns: a most peculiar caliber.

*The unexploited opportunities open to Russian sub crews even in World War I are hinted in the Czar's 1915 telegram to Laurence, skipper of the E-1: "You have saved our town of Riga!"

help yourself!

from the Cavalry Branch, some advice

by *LIEUTENANT COLONEL PAUL M. MORRILL*

IT is a beautiful day at Fort Armorplate. The sun is shining and the late fall breeze puts just enough nip in the air to make it pleasant. Two Cavalry officers meet at the entrance to Post Headquarters. Their faces reflect their obvious belief that they haven't a friend in the world. After a brief greeting Major Sadsack frowns at Colonel Toughluck and says:

"Did you see the latest issue of 'Poop For The Troops'? Major Luckyboy is going to that mission job in Graustark. I'd give my left arm for that detail, and I'm due for reassignment, too. My record is better than his. Why wasn't I picked for that position?"

Colonel Toughluck's mind is obviously dwelling on some problem of his own, so he doesn't answer the question. Instead he belligerently replies:

"You should kick. I've spent twenty years learning to speak Esperanto and I've just heard that Colonel Fortunato is being sent to their top military school. Why he was junior to me in the old Hoof and Mouth Dragoons. I've forgotten more Esperanto than he will ever know. Why didn't I get that detail?"

And, as the late afternoon sun casts long shadows over the parade ground, we leave our two friends standing in the gloom of their respective thoughts. The scene now shifts to the Pentagon where, in a flashback of what took place a month earlier, we find the Chief of the Cavalry Section studying a paper. After reading it he turns to one of his assistants and says:

"We have just received a quota for one Cavalry officer to attend the Esperanto Supreme War College. Here are the requirements. Get me a list of officers who meet them."

In a short time the assistant returns with several files and places them on the Chief's desk. In answer to the Colonel's raised eyebrow he says:

"Colonel, it boils down to this—we have only four officers of proper grade and experience who speak Esperanto well enough to attend this school. Only two, Colonel Fortunato and Colonel Toughluck, are presently available. I have their records here. Which one shall it be?"

The Chief studies the records for quite some time. There is little to choose from. Both officers have fine records. He cannot make up his mind until he compares their Preference Cards. Here he finds that Colonel Fortunato has specifically asked for this school. Colonel Toughluck hasn't even submitted a Preference Card for the current year and his old one makes no mention of this school. Shaking his head sadly at the old style card, the Chief directs that the necessary orders be issued directing Colonel Fortunato to attend the school.

This little story is fanciful only in the names used. It is repeated dozens of times each month. Many officers never get the assignments they want simply because they don't tell the right people that they are interested in them. Every year, between the 15th of November and the 15th of December, a new Preference Card is supposed to be submitted by every officer in the army. This card finds its way to the Career Management Section of the individual's branch of service. What happens then?

In the Cavalry Section the new card is checked off on a roster and then studied carefully. Every request on the card is noted. After this the card is filed in the officer's file and last year's card is destroyed. After a reasonable time has elapsed, a letter is written to each officer whose new card has not been received. Another period of time elapses during which late cards are received and processed. Finally it is time to make up the "book." This book is called "Duty Preferences of Cavalry Officers." It is made up by subjects. The current book contains some sixty subjects ranging from "Air Forces—Duty With" to "USMA—Staff & Faculty." In between are such subjects as "Central Intelligence Agency," "Navy—Schools" and "Research & Development." Within the subject the names of the officers interested are listed alphabetically. Thus whenever a request is received for an officer for one of these special assignments it is only necessary to check the list to pick out the best qualified officer available.

Of course the book is not used in selecting officers for schools within the normal school pattern. Nor is it used for duties that are normal to the officer concerned, such as duty with troops, etc. The Career Pattern is still the guiding factor. Within this framework, however, considerable flexibility is possible. For example—the Career Pattern specifies that all officers will have a tour of duty with Civilian Components. This can mean duty with the Organized Reserves, the National Guard or in the ROTC unit of a College or Prep School. Exactly which one it shall be is often determined by the Preference Card. Furthermore, an examination of the Cavalry Career Pattern shows that only eleven out of the first twenty-one years of the officer's service are in specified types of assignments. The other ten years and all the time subsequent to his twenty-first year of service are spent in performing duties according to the needs of the service. Much of this non-specified time can be spent in positions of your own choosing.

You must, however, register your choice and the best time and place is on your Annual Preference Card. It is due now so here is a little advice. Get two copies of the DA AGO Form 483, dated 1 April 1948, and fill them both out. Send one to The Adjutant General, U. S. Army, Washington 25, D. C., Attention CSGPA O CAV. Please use an envelope of sufficient size that the card will not have to be folded. Place the other card in your personal files. Once a month take it out and study it. Whenever you find that it no longer reflects your personal desires, make a corrected copy and send it to us. We will then change your files to reflect your new wishes.

There is an old saying to the effect that "The Lord helps those that help themselves." While laying no claim to Divinity or to supernatural powers, this office is anxious to help you to get the jobs you want, and if you will only tell us what you desire, we will do our very best to see that you get it.

The BRADY COLLECTION

The National Archives

Mathew B. Brady

In World War II, official photographers covered the action and activities of our services around the world. Their work represents a photographic record of major value to history. The material available in this field on previous wars within the period of photography's development is limited. Perhaps the most outstanding is the collection of Mathew B. Brady from the Nineteenth Century.

Mathew Brady was a pioneer in the daguerreotype field, entering into this activity in 1844, some five years after its inception. He established a studio in Washington, and in the course of time photographed many of the most famous national and international personalities of the day. More important than that to the military, he secured an extensive record of the Civil War.

Recognizing the importance of this photographic coverage of the war between the States, the U. S. Army purchased a large number of Brady plates. These repose, along with others, in the National Archives. Still other Brady work exists in the Library of Congress and in various private and institutional collections.

The classic photos appearing on these pages are of particular interest to the military. In later issues of The Journal we will present additional pictorial work from this and other fields. Next issue: Captured German Photos.

This photographic spread was prepared for the last issue of The Journal, when word came announcing the finding of some forty-odd new Brady plates in an Owego, New York, barn loft. Publication was held in order that we might incorporate some of the new items. They are the portraits of Generals Grant, Custer, Sheridan and Hancock. We wish to acknowledge the kind assistance on this feature of Mr. Bill Adam of the Photographic Section, National Military Establishment; Miss Josephine Cobb of the Still Picture Section of the National Archives; and Mr. Edward Brewer of Ansco Division, General Aniline and Film Corporation.

Gen. Philip Henry Sheridan

Gen. Winfield Scott Hancock

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Gen. George Armstrong Custer

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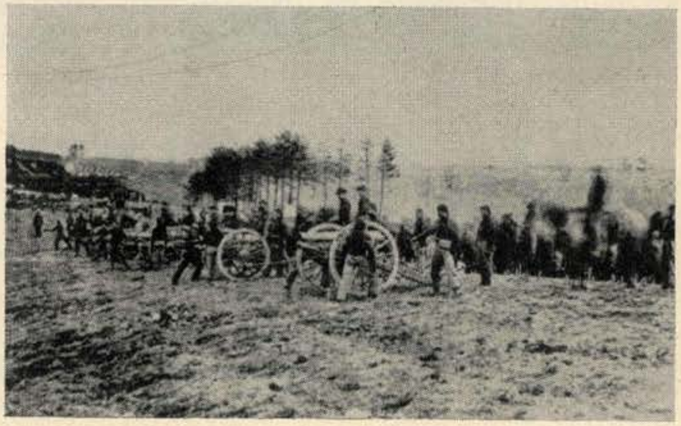
Gen. Ulysses S. Grant, a stereoscopic portrait taken during the war years.

U. S. Army

President Lincoln visits General George B. McClellan at his Potomac Army Headquarters.

First U. S. Army Combat Photo

Apparently the first photograph of the U. S. Army in combat, this shot was made under fire by Mathew Brady at the Battle of Fredericksburg, Virginia in 1863.



U. S. Army

Grant's engineers bridging James River.

U. S. Army

Lincoln visits Union officers in the field.

. . . outstanding pictorial history . . .

U. S. Army.

NOT SO LONG AGO!

A Tank Platoon in Tunisia

by CAPTAIN CHARLES L. DAVIS

WHEN the Allies made their initial invasion moves against North Africa in the Fall of 1942, the Axis had few troops in Tunisia. The landings at Casablanca, Oran and Algiers were followed by a quick Allied move to put troops into Eastern Algeria and Tunisia, to prevent the seizure of this key area by the enemy. A rapid build-up of Axis forces, along with a poor road net, a wet season, and administrative problems, and the Tunisian Campaign was under way.

From a period of fighting in Southern Tunisia, extending into April of 1943, the American II Corps, consisting of the 1st, 9th and 34th Infantry Divisions, the 1st Armored Division, and Corps Troops, moved across the communications lines of the British First Army and into position on the Northern Tunisian front.

The Offensive

In late April the Allied line in Tunisia exploded into a general offensive destined to crush the Axis in Tunisia. The II Corps attack in an easterly direction, extending over a forty-mile front of mountainous terrain, was characterized by continuous heavy fighting.

The 1st Armored Division sector of this attack consisted of the Tine River Valley and the hills to the south, an area aptly named the Mousetrap. The terrain was unsuitable for armor. Infantry fought through the hills while reconnaissance and engineer units maintained contact and cleared mines, and the tanks fired indirect fire missions and constituted a mobile reserve against counterattack.

By May Day (1943) the infantry of the 1st Armored Division had taken most of the ground on the south side of the Mousetrap, while units north of the Mousetrap had driven the enemy back upon the last defensive positions before Mateur. The moment was at hand for the use of armor.

The Armor To Be Used

Under the organization of the time, the 1st Armored Division was composed of one infantry and two armored regiments. Each armored regiment had one battalion of light and two battalions of medium tanks. The medium companies were equipped with M4 tanks, fitted with radial engines and a 75mm gun—both underpowered and undergunned.

Not the big picture—but right where you like them—down on the working level! It was not so long ago! Here is a story to provoke thought and action so that today does not become a "*not so long ago*" in the "*not so far off.*"

The Armor In This Story

During the action of late April and early May the Third Platoon of Company D, 13th Armored Regiment, operated in its organic role as a part of the 2nd Battalion tactical deployment of companies, engaging targets of opportunity, firing indirect fire missions, and standing ready against the threat of counterattack.

The enemy, having lost all of the forward slopes in the area west of Mateur, withdrew to the hills east of the city to organize his defenses for his last effective stand against the Allies in Africa. Combat Command B (less the 2nd Battalion) entered Mateur in late morning of the 3rd of May, 1943. A three-day siege of the key point was broken with the Allied attack launched on May 6.

The 2nd Battalion of the 13th Armored Regiment continued its action in the Upper Tine Valley just south of Mateur. The battalion mission was to break through the German lines east of Mateur, cut the Bizerte-Ferryville-Djedeida-Tunis road, and continue eastward to cut the main Bizerte-Tunis highway. The mission of the Third Platoon was to protect the left flank of the Battalion during the attack and reorganization.

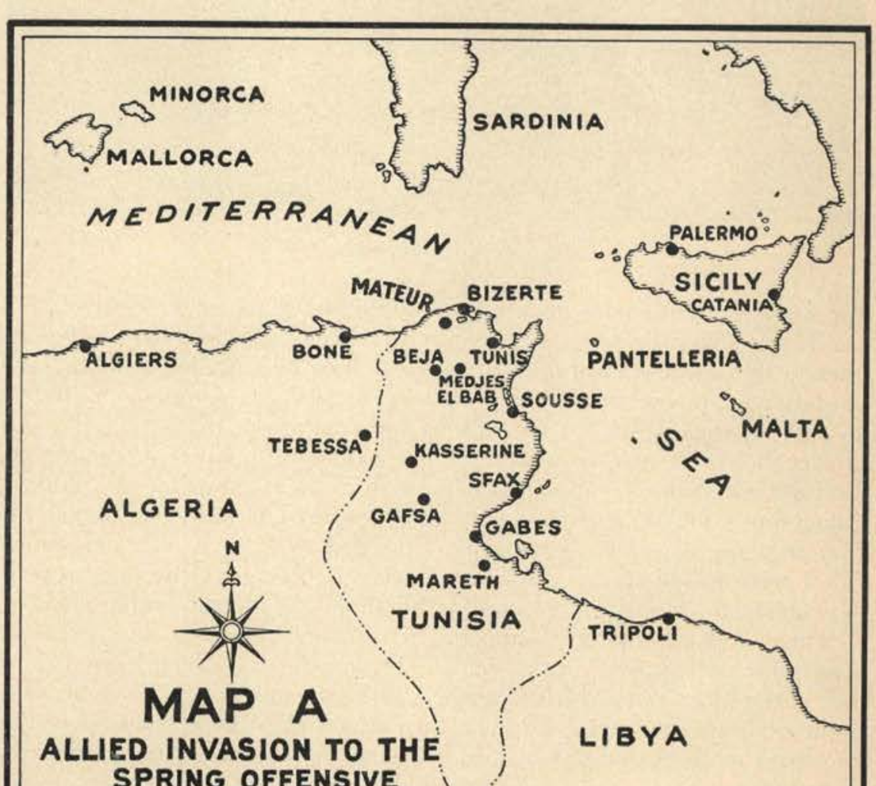
Getting Down to Business

The attack jumped off in the small hours of the morning of May 6th, from a line of departure along the low ridge running in a northwest-southeast direction just east of Mateur. A low ground fog blanketed the valley in front of the ridge. The fifty-three tanks crossed the line of departure without artillery preparation, due to a last minute change in plan during the night, and advanced across an area suitable for the use of armor, and consequently well protected by enemy antitank guns.

In the opening moments of the attack, the only sound across the stillness of the North African dawn was the crescendo of engine roar and the squeaking of suspension systems. That didn't dominate the atmosphere for long. From the German line purple pyrotechnics arched into the air—the enemy signal of armored attack! The field erupted into full action, with antitank guns lacing out their high velocity projectiles in a crisscross pattern, interspersed with streams of machine-gun tracers concentrated on knocked out and burning tanks. A mine field took its toll, and the battalion commander, realizing the overwhelming superiority of the defense, ordered the remaining tanks back on the line of departure. His own tank was destroyed by antitank fire before the instructions were completed.

The battalion lost seven tanks, including those of the battalion commander, the E Company commander, two platoon leaders, and three more. Three others which by-passed the mined area went into a defilade position and sat tight, well forward of the LD.

The Third Platoon of Company D moved back in defilade and joined the other elements in a detailed search by observation and fire for the well dug in and camouflaged German antitank guns. The day passed with this mission. The enemy maintained heavy artillery fire most of the time. The battalion commander, Lieutenant Colonel Henry Gardiner, wounded during the morning attack, was



MAP A
ALLIED INVASION TO THE SPRING OFFENSIVE

replaced by Lieutenant Colonel Hamilton Howze.

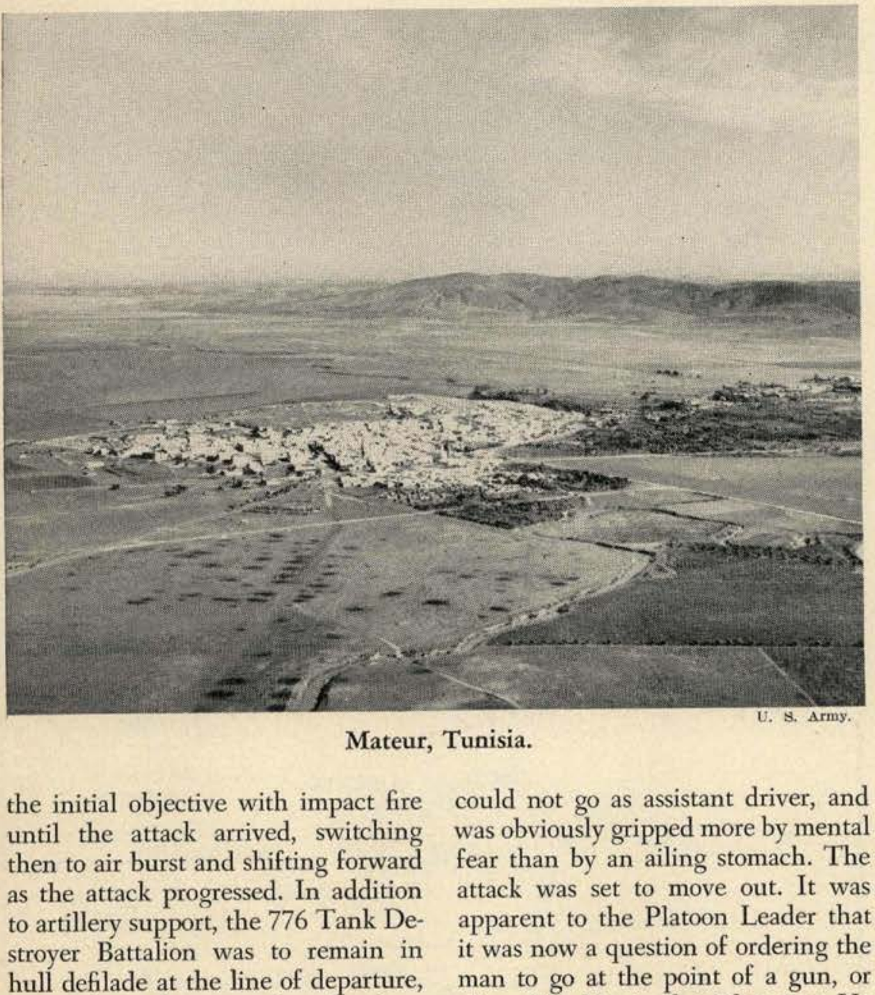
Renewing the Attack

About noon the battalion commander called together his staff and unit commanders and formulated plans to renew the attack. With an alteration of the original plan, and with strong artillery support, it was intended to smoke the right flank of the attack and hold the screen until the tanks were beyond the first line of ridges. Preparatory fires were planned in detail, to cover the area of German antitank defense in front of the initial objective with impact fire until the attack arrived, switching then to air burst and shifting forward as the attack progressed. In addition to artillery support, the 776 Tank Destroyer Battalion was to remain in hull defilade at the line of departure, using direct fire on selected points, and engaging targets of opportunity. They were to follow as soon as fire was masked.

There was no infantry support, due to the commitment on the south side of the Mousetrap, which resulted in heavy losses precluding the switch of troops to the Combat Command B attack.

The Third Platoon pulled out of position by sections and returned to Mateur for ammunition resupply in preparation for the late afternoon attack. With the racks full, and a few extra rounds on the floor of the turret, the Platoon Leader assembled the tank commanders to go over the plan of attack, which for the Third Platoon remained the same as in the morning—to protect the left flank of the battalion.

A few moments before jump-off time the commander of the fifth tank brought its driver to the Platoon Leader to say that he was sick, had been vomiting all afternoon, and just could not go. A replacement was not available. The driver stated that he could not go as assistant driver, and was obviously gripped more by mental fear than by an ailing stomach. The attack was set to move out. It was apparent to the Platoon Leader that it was now a question of ordering the man to go at the point of a gun, or of sending him to the aid station. He decided in favor of the aid station with the thought of dealing properly with the situation at a better moment. It was a decision he later regretted. The man's tank and tank commander were lost and two of the remaining crew members were casualties as the action developed. With a full crew the story might well have been different, especially in consideration of the fact that the lacking crew member was the driver of the vehicle, considerably more experienced than the man who took the tank into action.


U. S. Army.

Mateur, Tunisia.

The artillery laid down the smoke, and began the preparatory fires in front of the objective. The tank destroyers cut loose with their direct fire. The battalion attack of forty-four tanks got under way.

Opening Up

Every tank opened up with every gun, except the 50 caliber machine guns, at anything even remotely resembling a target. The artillery, a bit late in lifting from impact to air bursts, dropped some rounds among the friendly armor. The consensus among the tankers seemed to be that they preferred a 105 from behind to an 88 from the front. All in all, the artillery support was near perfect, and it enabled the tanks to get on the ridges without a loss. It effectively neutralized the antitank fire in the zone of advance, and destroyed some guns. Fire from the tanks destroyed more; some still operative and with crews to man them represented a threat to supply and administrative vehicles, since there was no infantry accompanying the attack, or following it, to mop up the area.

The arrival of the tanks on the objective at the top of the ridge placed them beyond the preplanned fire area. The Germans had organized in depth, keeping considerable antitank strength in the rear. The battle became one of survival between the tanks and the antitank guns.

The mission of Company D, and of its Third Platoon, while appearing to be of secondary importance, actually was extremely important. The Germans held the hills to the north in considerable strength, particularly in armor. They had contained Combat Command A of the 1st Armored, and other troops, for about three days. In order to accomplish its mission, the Third Platoon had to hold pretty well to the skyline on a ridge generally running east and west, thus exposing the tanks to flanking fire from the extreme right of the battlefield. This proved to be more of a threat than the left flank, as a move of a few yards to the right placed the tanks in defilade from the left flank, but exposed for miles to the right.

Topping a small rise, the Platoon Leader's tank, in line with the lead tanks of the battalion, came in view of a small caliber antitank gun some fifty yards ahead, sighted down a depression running diagonally to the line of advance. The enemy crew swung their gun toward the tank, and the Platoon Leader forgot all about fire commands. Fortunately, the gunner had turned the gun to the front, and he saw the enemy gun at about the same moment the Germans saw the tank. As the tank was moving right along, it was about thirty-five yards from the target when the gunner fired. The shot was slightly off center, but it was low enough to explode on the near side of the gun pit, wrecking the gun as well as the crew. About this time the Platoon Leader found his voice, yelling so loudly that the driver got on the interphone to ask the gunner if the Lieutenant had been hit.

The platoon began to receive considerable fire from the right flank, making it wise to sideslip down the hill to defilade behind a secondary ridge. The terrain became rougher, the progress slower.

A Bit of Dueling

An 88mm gun came into the Platoon Leader's vision, about eight hundred yards to the right front, with the gun pointing to his right. He gave 800 to the gunner, and the round was high. He gave 700, and the round was still over. 600 was again high. The German crew began traversing to lay on the tank. About then the Platoon Leader became a bit frantic and began screaming "Four, four!" The next round was close enough to stop the gun, which got off one round that was barely wide of the tank. The gunner polished off the 88 with several more rounds.

At this moment the number two tank had to withdraw to take care of a projectile stuck in its gun. This was prior to the time the armored units began to carry 75mm howitzer cases to shoot out projectiles which became stuck during loading. It was necessary to use the rammer staff for the operation, and the field of battle is no place to engage in such an activity.

The Platoon Leader moved his tank down the hill to the vicinity of the Company Commander, when both tanks came under fire from an 88mm gun some four hundred yards to the front. The Platoon Leader's tank fired a short and an over, and before he could split the bracket the Company Commander scored a hit alongside the barrel. The gun burst into flames.

As the platoon moved back up the ridge to cover the left flank, the Germans responded with high explosive and armor piercing shell. A look through the glasses showed at least one Mark VI tank firing at approximately 3000 yards, maximum range for the American tank direct fire on the inadequate sights. One round landed about three quarters of the distance to the enemy target. The Platoon Leader put his trust in mobility. He kept moving, issuing similar instructions to his platoon.

The Company Commander urged the Platoon Leader, via radio, to move higher on the hill. The Platoon Leader asked who was going to take care of the Mark VI on the right flank. "What Mark VI?" asked the CO. A moment later the Platoon Leader and his crew were hitchhiking. A near miss had struck near the right rear of the tank, breaking the track and immobilizing the vehicle. Recognizing the futility of using the 75mm gun to compete with high velocity weapons equipped with adequate fire control instruments for that range, the Platoon Leader ordered the crew to abandon the tank. The crew was formed in a diamond patrol formation and set out across the fields to the tank reorganization area, in a depression about three-quarters of a mile from the disabled tank. In a case of mistaken identity the crew was fired upon by a 75mm tank gun in the left battalion. The men hit the ground and the shell, landing some fifty feet away, did no damage.

At the assembly area the Platoon Leader reported to the Company Commander and began organizing the sector for the defense, posting local security. The fifth tank of the platoon had been lost, leaving the platoon with two tanks present, one destroyed, one disabled and one at the rear.

U. S. Army.

The Upper Tine River Valley, known as "The Mousetrap."

A Rough Time

That fifth tank had been the one entering the attack with a four-man crew. When the limited supply of ammunition that could be carried in the turret had been exhausted, it had been necessary to stop the tank for the driver to pass ammo from the racks under the turret and behind the driver and assistant driver. That task is normally handled by the assistant driver while the tank is in motion. On this occasion, when the tank sacrificed its mobility to accomplish the transfer of ammo, the guns of the enemy on the right flank of the battalion laid on the tank and broke a track. Not realizing the futility of engaging in a fire fight under such circumstances, the tank commander continued to fire. The Germans concentrated on the vehicle and literally pulverized it with high explosive. First the radio and interphone were knocked out, then the turret periscopes, and finally the turret traversing mechanism, although not until the last round of ammunition had been fired.

The crew was trapped in a disabled tank, out of ammunition and without communications, while the enemy laid on the high explosives. Concussion and shock wrecked the instrument panel and all interior control mechanisms. The tank commander alerted the crew to evacuate through the top hatches rather than through the bottom escape hatch, because of the many low rounds striking under the tank. As the crew began the evacuation several more hits by German guns killed the tank commander, broke the driver's leg and wounded the loader. The corporal gunner took charge and moved the wounded from the vicinity. He managed to stop one of the rear tanks of another platoon, to place the driver on the vehicle to be transported to the reorganization area. He then took the other wounded man with him to the line of departure, during which trip, with one pistol between them, they took four prisoners.

The number two tank of the platoon, which had returned to remove the stuck projectile, also took several prisoners on the way back. The third and fourth tanks of the platoon destroyed several guns of various sizes, killing and capturing several of the enemy. Not being able to take the prisoners along, they were disarmed and sent to the rear. Some arrived, some did not. Of the latter, undoubtedly several rejoined their forces, to fight again. There was no other solution open to the tankers in view of the situation.

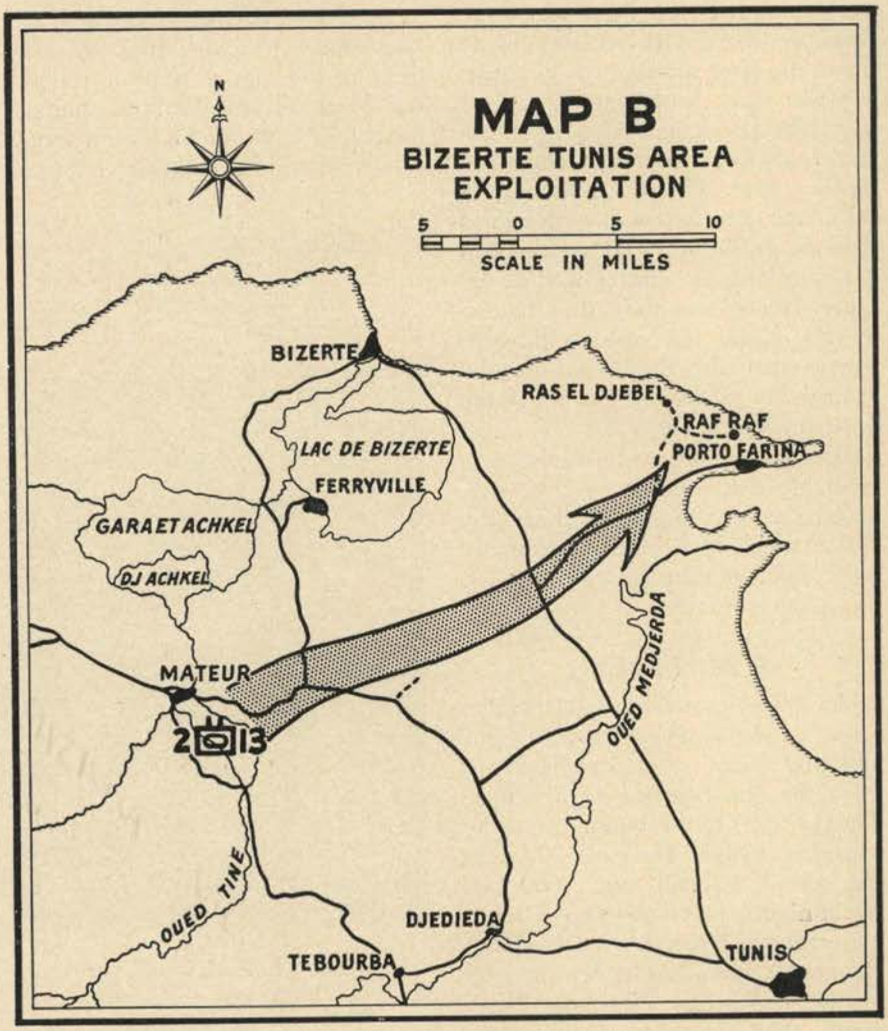
The attack had broken the German main line of resistance east of Mateur, with comparatively small losses. On the night of May 6th the 2nd Battalion and its attached tank destroyers bivouacked within the battle position, and made plans to exploit the breakthrough.

The Exploitation

While the battalion commander was planning the next operation, Company D was given the mission of sending out a reconnaissance patrol to reconnoiter a route to the southeast to the Mateur-Djedeida road, with the idea of moving the battalion there during darkness if the area proved suitable for the movement of tanks.

Being without a tank, the Third Platoon Leader volunteered to lead the patrol. The Platoon Sergeant and several men also volunteered to go on the patrol. Following organization and orientation, the patrol set out.

Low, black clouds reduced the visibility to nil, and occasional showers soon drenched the men to the skin. Shelling both by enemy and friendly artillery—and in particular the friendly firing of white phosphorus—along with the occasional scattered flareup from burning guns and vehicles, made it quite impossible to become accustomed to the darkness. All in all, it required five hours for the patrol to work through the German positions, avoiding two enemy patrols on the way; secure the desired information; and return to make an 0230 Officers' Call.



The Platoon Leader informed the Battalion Commander that the reconnoitered area was suitable for tanks, but contained many prepared positions, several of which were believed to be antitank guns. The Company Commanders of F and D both suggested that the battalion move north and disperse just prior to daylight along a high ground area that contained no antitank guns. This would enable them to defend in any direction, would move them away from known antitank and artillery positions, and would not add to the difficulties of resupply. This plan was adopted.

A German shelling made it impossible to repair the tank of the Third Platoon Leader, and succeeded in blowing a track off the number three tank of the platoon. The return of the number two tank left platoon strength at two tanks for the resupply operation and the continuation of the attack.

U. S. Army.

Turret of Medium Tank M-3 pierced by 88mm. shell.

Continuing the Attack

The attack continued in late morning of the 7th of May, crossing the Bizerte-Ferryville-Djedeida-Tunis road, where the number two tank became a casualty, breaking the shaft on the turret traversing mechanism. The platoon continued with one tank. The action continued along the main Mateur-Djedeida-Tunis road to a junction with the road connecting the Mateur-Tunis road and the Bizerte-Tunis highway.

Earlier in the day the fighting had been against scattered strong points supported by artillery, but as the action progressed, the artillery diminished and the advancing troops found an 88mm battery abandoned. While the tankers were wondering what the Germans were up to, the enemy opened fire from a mutually supporting position. Some of the overwatching tanks and tank destroyers quickly eliminated the threat, and the battalion moved on.

At the junction the enemy had developed a well organized and strongly defended position that was especially strong in antitank defense. A violent fire fight developed, and Lieutenant James Curry, commanding Company E, was killed when a freak hit slammed the turret hatch cover down and crushed his head. The tanks and tank destroyers deployed in particularly bad tank terrain, and reduced the resistance by fire. With the artillery in support of the other two battalions, and in view of the bad terrain for armor, the battalion made use of darkness to move onto the position.

A quick look at the field on the morning of May 8th gave evidence of the effectiveness of the tank and TD combined fires; destroyed guns and enemy dead lay scattered about the position.

From there the attack continued northeast across terrain quite unsuited to the use of armor. By midafternoon of the 8th the battalion was in sight of the main Bizerte-Tunis road, and looking for a passage down from the heights.

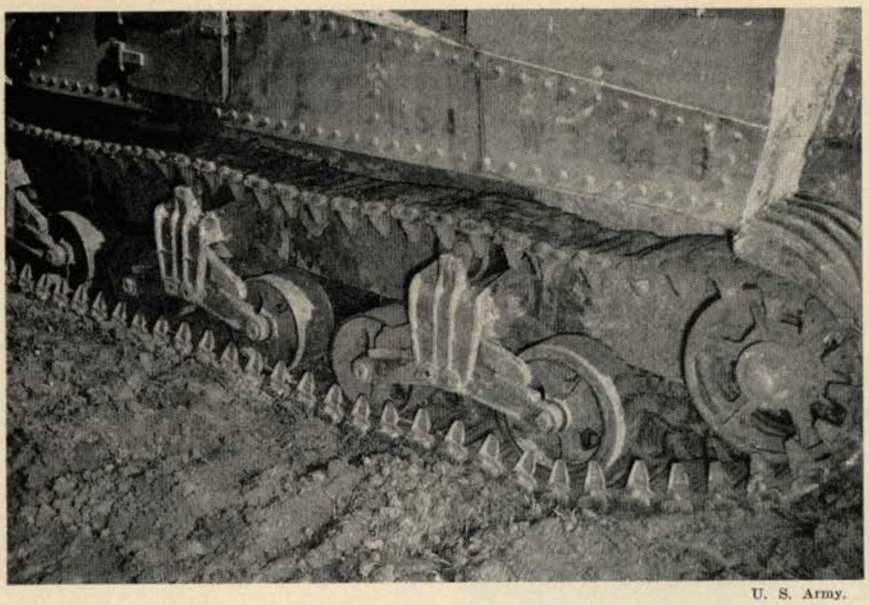
Moving down to the coastal plain, the battalion encountered a wadi that was a natural antitank obstacle. The tank of the D Company Commander threw a track attempting to cross it. A Headquarters Company tank became stuck while trying to by-pass the first tank. The Third Platoon Leader, while trying to extricate the other two, threw a track on his own tank.

As the battalion mission was to cut the Bizerte-Tunis road at the intersection of the Porto Farina road, two or three miles to the north, the CO decided to locate a more favorable passage to the plain a bit farther to the north. The Third Platoon Leader was left to guard what had become five disabled tanks resulting from the strange track-throwing contest.

Meanwhile, the Germans had moved in a battery of 88's that had been moving southward along the main Bizerte-Tunis road. A Company D sergeant had observed the battery of four guns leave the main road, move over to a secondary road, and go into position some hundreds of yards beyond the main road. Once again the battalion was badly in need of artillery support that was not available. The fire control instruments of the tanks were inadequate for the range. The enemy could not be brought under effective fire.

The 88's opened on the disabled tanks, and the tanks returned the fire. The duel did not amount to much, since neither side had good observation. Three men in D Company were wounded while in a briefing at the tank assembly area.

The Third Platoon Leader, moving on orders to the bivouac area,



U. S. Army.

M3 Medium Tank No. 309478 of the 2d Battalion, 13th Armored Regiment, has worn out bogie wheels, with 273 motor hours and a mileage of 1757.

found three of his disabled tanks from the previous two days back and ready for action. As preparations were under way to complete the exploitation of the attack, the enemy opened up with everything he had on the coastal plain. For a while it appeared like a counterattack preparation, but the lack of damage soon made it obvious that the Germans were destroying ammunition the easy way.

At daybreak of May 9, the battalion attacked north along the Bizerte-Tunis highway. At the Porto Farina junction, the direction was switched to enter the town. Company E captured an Italian regimental headquarters, whose commander, accompanied by the 2nd Battalion CO, induced the commander at German headquarters to surrender. The word was passed down to enemy units, so that sporadic resistance to American units along the front gradually ceased. Enemy troops began to surrender throughout the coastal area. The 2nd Battalion, 13th Armored Regiment, 1st Armored Division, took up positions along the sea between the towns of Raf Raf and Ras el Djebel, to prevent destruction of equipment and escape from Africa. Shortly after, all resistance in II Corps zone came to an end.

In this final action of the North African fighting, the 1st Armored Division had been used as a unit in an offensive role. The armor had been used in the only logical area along the forty-mile front. Lacking substantial infantry support for both Combat Commands, it had been sound logic to throw available infantry into the CCA area, to assist their attack through rugged terrain on the north. However, the absence of infantry was a serious handicap to CCB. In particular, the lack of foot troops made difficult the mopping up of the field and the handling of prisoners, many of whom undoubtedly were able to rearm and return to the fight.

Equally restricting had been the lack of artillery support in the way of preplanned fire to cover known antitank positions and a well defended zone, and to handle targets of opportunity beyond practical tank gun range. Three tank battalions had been sent on separate missions, with only one field artillery battalion to support the three.

Combat Command B violated the principle of mass in splitting the three tank battalions and sending them on separate missions. With the mission of breaking the enemy main line of resistance, cutting his communications and preventing his escape, the use of a combined force would have simplified planning and made maximum use of the striking force.

The rapid estimate of the situation by the battalion commander on the start of the first attack, and his quick decision to return to the line of departure saved many tanks for the later successful attack. Full use of experienced subordinate commanders was a determining factor in planning for the successful attack. And the full use of support contributed to the success of what proved to be a well coordinated action.

So far as the equipment goes, the tanks had been run many miles over a normal life. The M4 tanks which replaced the M3's had for the most part been those used on maneuvers in the States by the Second Armored Division. Thoroughly worn-out equipment was kept in the line by the diligent efforts of the tank crews. That the M4 tank with the 75mm gun was obsolete before it reached the fighting forces is a well known fact. The tanks of the 2nd Battalion had no indirect firing equipment, except a quadrant, when they were received. The tanks of the Third Platoon were equipped with indirect firing equipment captured from the Germans and Italians at Kasserine Pass. The superior armament and fire control instruments of the enemy enabled them to reach far beyond the effective range of the 75mm gun, and in the case of the Third Platoon, to disable two tanks, one of which was destroyed.

In summing up the action of the Third Platoon, it is important to remember that the platoon was part of a battalion tactical unit, and platoons were controlled through their leaders by the company commanders. Careful coordination and planning took place before the action, but once the attack was launched it was difficult to control the individual platoons. Platoons were controlled partly by radio by the platoon leaders, but perhaps more by example. In a battle for survival between tanks and antitank guns, there is little time for radio conversation.

To a tanker only recently through the harsh experience of armored warfare in World War II, or to a student undergoing armor training today, a review of some of the lessons learned from this action would leave the impression of being a rehash of the obvious. The lessons are here in the story. There is no gainsaying the fact that, in the event, each apparently insignificant item has its appreciable and direct bearing on the individual, the planning, the action, the outcome. Of that the combat veteran will assure you. Of that the student may rest assured.

It is a key factor in making possible Armor's role of breakthrough and exploitation. It is a prime factor in the maintenance of mobility. It is the largest of its type of organization in the Army. It is the . . .

ARMORED ENGINEER BATTALION

A Part of the Team

by MAJOR EDWARD A. ARDERY

WHOOM! The bridge blows up about fifty yards ahead of the speeding tank. The river is about 15 feet deep and 60 feet across. The lead reinforced battalion has only one engineer platoon and two bridge trucks in its column. You are the lead company commander; you are asked by the reinforced battalion commander: "Can we get across with the engineer bridge equipment that we carry? Quick! Quick! Must know immediately! What??? You don't know? By damn, you'd better find out!"

Armored officers, infantry and tank, will be in command of teams of tanks, infantry, reconnaissance, and engineers, supported by artillery and the service troops of the division. These officers must know the capabilities and limitations of the engineers as well as the other member parts of their team.

Mission and Organization

The armored engineer battalion, as an organic part of the armored division, has the general mission of facilitating the rapid movement of the armored division and of increasing the division's combat effectiveness by means of general engineer work.

The battalion is the largest battalion organization in the Army, having more officers, enlisted men, and M1 rifles than any other. For an idea of its organization, see the accompanying chart.

The battalion's basic tactical unit is the squad of one of the four combat companies. This squad consists of eleven men commanded by a sergeant, riding in the same type of full-tracked armored personnel carrier with armament as do the armored infantry squads, and carrying in addition the carpenter, demolition, pioneer, and mine detector sets, plus a 3.5-inch rocket launcher and an SCR-510 radio. Each squad member carries an M1 rifle except the driver who has a submachine gun.

There are three identical squads and a headquarters section of twelve men in each platoon. This headquarters has: a peep equipped with an SCR-508 radio; two 2½-ton dump trucks carrying additional carpenter, demolition, and pioneer sets, extra explosives and mines, a portable gasoline chain saw, and two caliber .30 machine guns; and an engineer armored vehicle, at present a modified M-26 tank equipped with a bulldozer and SCR-508 radio, but which will be a medium tank chassis with bulldozer, demolition charge projector, and mine detection and removal devices, when developed.

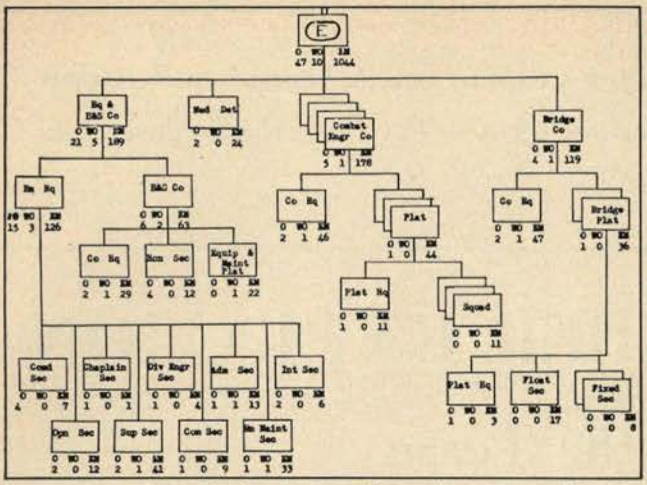
Each combat company has three of these platoons and a company headquarters, containing the usual administrative personnel and equipment, and in addition: a truck-mounted air compressor with its air-operated tools, jack hammers, chain saws, etc.; a 6-ton truck tractor drawing a 20-ton trailer which carries a D7 angledozer; and a 2½-ton dump truck carrying an oxyacetylene welding set, three canvas reconnaissance boats, a minefield marking set, and two caliber .50 machine guns. The command section has an armored personnel carrier equipped with SCR-506 and SCR-508 radios, and a peep with an SCR-528 radio.

The bridge company consists of a headquarters and two identical bridge platoons, each transporting one 50-ton fixed or floating divisional bridge (M4A2), which is the bridge with the hollow aluminum stringers that also serve as deck, floated on 18-ton pneumatic floats. The mission of the company is to carry and maintain the bridge and to operate its power equipment, but not to construct the bridge since it has too few personnel for this purpose.

Each bridge platoon has a headquarters, one floating and two fixed sections. The floating section carries the rubber floats and saddles, a 25-foot power boat, the eight 22-horsepower outboard motors, and the 21 assault boats —all carried on 8 Brockway bridge trucks and three 2½-ton dump trucks with trailers.

Each fixed section has five Brockway bridge trucks, each carrying about 38 feet of bridge, and a 2½-ton bolster truck carrying trestles and additional flooring. This 38 feet of bridge is the maximum span that is

A TEAM FEATURE—NUMBER FOUR IN A SERIES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Bridge Co
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H&S Co
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Co Hq
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O WO EM 4 0 12
Equip & Maint Plat
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Co Hq
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Plat
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Bridge Plat
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Chaplain Sec
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Sup Sec
O WO EM 2 1 41
Com Sec
O WO EM 1 0 9
Bn Maint Sec
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Float Sec
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Fixed Sec
O WO EM 0 0 8

Organization of the Armored Engineer Battalion.

capable of carrying a 50-ton load. When longer bridges are required and the water is not too deep, the flooring and the trestles of the fixed section can be combined to build a bridge 114 feet long. Both of the fixed sections together can make a fixed bridge about 191 feet long. These lengths are controlled by the number of trestles available. By use of expedient supports of lumber, these lengths can be increased. By combining the two fixed sections and the floating section of one platoon, about 355 feet can be built.

The company headquarters contains necessary administrative personnel and equipment, and has, in addition, two truck-mounted cranes with various types of attachments, two D7 angledozers each carried on 20-ton trailers, and one truck-mounted air compressor.

The battalion headquarters and the headquarters and service company have the usual administrative personnel, and, in addition, a division engineer section, a reconnaissance section, and an equipment and maintenance platoon.

The division engineer section, headed by a major, remains normally at division headquarters as the staff representative of the division engineer who, as battalion commander, is usually with his troops. This major is commonly called the "A.D.E.," an abbreviation of his title, "assistant division engineer."

The reconnaissance section consists of four subsections, each with an officer, a noncommissioned officer, and two radio operators. At the present time, a ¾-ton truck with SCR-506 and SCR-528 radios is used until a suitable light armored vehicle is developed. The mission of the section is to furnish engineer intelligence to the division engineer and other commanders.

The equipment and maintenance platoon has a pool of engineer equipment for loan as needed. It has the necessary operators and supervisory personnel to operate as a unit for certain types of jobs such as quarrying. The platoon contains: two truck mounted cranes with attachments, one D4 tractor with bucket loader carried on a 20-ton trailer, two motorized road graders, and a truck-mounted air compressor.

In addition to the regular duties of the staff sections of battalion headquarters, the battalion has the responsibility for the camouflage and mine warfare training, and the map, water, and engineer supply for the division. The S-4 section has 17 2½-ton dump trucks to carry supplies; by dumping the loads of all of the dump trucks in the battalion, 61 2½-ton dump trucks are available for engineer construction, eight from each combat company.

Capabilities

As can be seen from a study of the equipment, each higher unit within the armored engineer battalion has additional means of doing increased amounts of engineer work. If the forward elements cannot surmount the obstacle or maintain the passage already opened, they call upon the following engineer units: the platoon on the company and the company on the battalion. If the battalion cannot do the work for lack of men or time or matériel, corps engineer troops are called upon.

Some of the normal armored engineer tasks are:

Construction, repair, or maintenance of roads and by-passes.

Construction or repair of fords, ferries, bridges, or landing strips.

Providing engineer personnel for assault stream crossings and the assault of fortified positions.

Assisting the movement of armor over difficult terrain for limited distances.

Removing, or providing passage through, natural and artificial obstacles.

Providing engineer supply service, including water and maps, to all divisional and attached units.

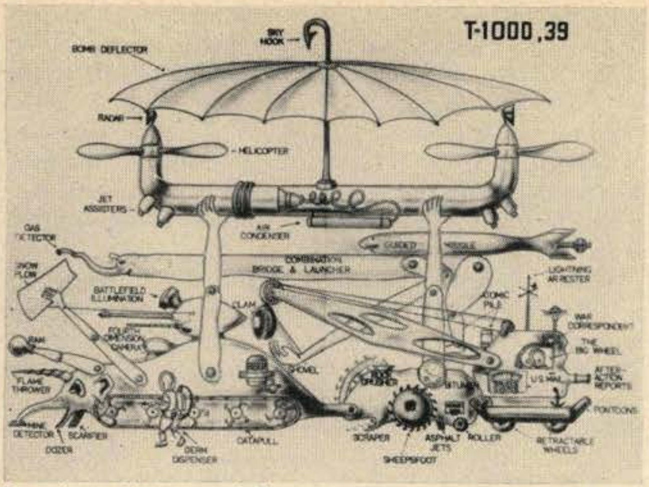
Executing missions, other than engineer, only when such missions have been definitely determined to be more important than engineer work.

Attachments

The increasing speed of operation and weight of armor necessitates increased engineer support. To provide this support effectively and efficiently, engineer elements must be properly composed and placed in each size and type of combat team. The attachment of engineers, like other

ABOUT THE AUTHOR

Major Edward R. Ardery completed R.O.T.C. training for a commission as 2d Lieutenant of Infantry in 1939; graduated from the United States Military Academy in January 1943 in the Corps of Engineers. He served overseas during the war with the 56th Armored Engineer Battalion and as a task force commander in the 11th Armored Division. After the war he was sent as an observer to the Antarctic with U.S. Navy Task Force 39 by the U.S. Air Force. He is a graduate of the Massachusetts Institute of Technology with a Master's degree in engineering. At present Major Ardery is attending the Advanced Course at The Armored School.


T-1000,39
SKY HOOK
BOMB DEFLECTOR
RADAR
HELICOPTER
JET ASSISTERS
AIR CONDENSER
GAS DETECTOR
GUIDED MISSILE
COMBINATION BRIDGE & LAUNCHER
SNOW PLOW
LIGHTNING ARRESTER
BATTLEFIELD ILLUMINATION
CLAM
ATOMIC PILE
WAR CORRESPONDENT
FOURTH DIMENSION CAMERA
RAM
THE BIG WHEEL
SHOVEL
AFTER-ACTION REPORTS
FLAME THROWER
ROCK CRUSHER
U.S. MAIL
PONTOONS
MINE DETECTOR
SCARIFIER
DOZER
GERM DISPENSER
CATAPULL
SCRAPER
ASPHALT JETS
SHEEPSFOOT
ROLLER
RETRACTABLE WHEELS

Drawing of proposed T-1000, 39 Engineer Armored Vehicle, complete with sky hook, designed to perform the more ordinary missions of the Armored Engineers.

members of the team, depends upon the situation and the amount of engineer work expected. A frequent attachment to a combat command is one armored engineer company plus one platoon of the bridge company. A reinforced battalion might expect to be supported by one platoon of this combat company, reinforced with two truck loads of bridge, if the battalion is in contact with the enemy. The reinforced battalions of the combat command not in contact with the enemy would normally have no engineer support until such time as it was needed. The platoon is not normally broken down with the attachment of squads to companies. The armored engineer battalion, less attachments, usually remains under division control, and moves with division troops bivouacking near division artillery.

Offense

In the pursuit or exploitation the lead reinforced battalion's engineer platoon, with its attached bridge equipment, will usually be placed in column immediately behind the lead reinforced company. This distance will normally be far enough back to keep the engineer vehicles from being pinned down by the initial enemy fire, yet far enough forward to quickly overcome obstacles so as not to lose the momentum of the attack. The remainder of the combat company might be located just behind the combat command forward echelon.

As the lead elements of the reinforced battalion come upon an obstacle, the engineer platoon leader, who is in the reinforced battalion radio net, hears the report and immediately makes a reconnaissance, calling for any necessary aid from the engineer combat company. The platoon leader may be called upon to make an estimate of the time required to pass the obstacle, so that it can be decided whether to try another approach. The necessary engineer vehicles are rushed to the obstacle, all other vehicles moving off the road if practicable. When the obstacle has been overcome, the engineers move out with the column because of the extreme difficulty in catching up, unless there is some real need for guards or maintenance personnel. In any case, the guards are relieved as soon as possible by the engineers further back in the column, and finally by corps and army troops, who make semipermanent repairs.

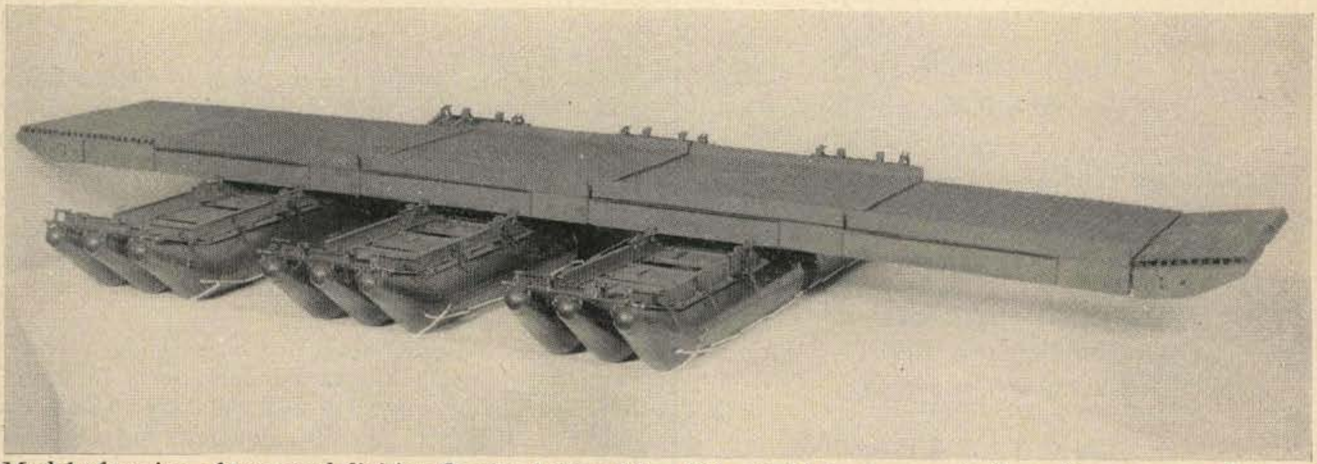
Because of the amount of time and material required for the repair or construction of roads, the troops of the armored engineer battalion will have little opportunity to do this type of work in anything but static situations. As a result it will often be necessary for the division to open up supply routes on principal roads if the combat commands have traveled over secondary roads to avoid enemy defenses.

Obstacles that will be encountered repeatedly are: minefields and scattered mines, roadblocks, abatis, blown bridges, road craters, and abandoned vehicles. The latter must be pushed off of the road quickly before the tracked vehicles of the division seriously tear up the road in getting around them.

In a slowly moving offensive operation, when a combat command is making a coordinated attack, the engineer platoons supporting the reinforced battalions will advance with the carriers from which the infantry has dismounted, unless some obstacle is known or actually encountered. In this case the engineers move forward and clear the obstacle while covered by tank fire and the infantry. Often it will be necessary to clear the obstacle at night due to enemy reaction.

Defense

In retrograde movements the engineer troops are again



Model of section of proposed division floating bridge (class 60) with 24-ton pneumatic floats. Superstructure is metal with unobstructed roadway, of treadway type.

formed into teams with the tanks and infantry to delay the enemy. The engineers construct obstacles in front of the enemy and execute them upon the order of the team commander. Additional obstacles are prepared behind the covering force, and when this force has withdrawn through the obstacle, it is completed. The types of obstacles will be the same as those reduced in the offense, with particular care being used to tie in these artificial obstacles with natural ones.

In the organization of a defensive position, all combat troops construct defensive works and obstacles, with the engineers doing only those which require special equipment or training. For example, the engineers construct or closely supervise the laying of division minefields, demolitions, concrete or steel obstacles, and antitank ditches. Frequently, in static defensive situations, the engineer battalion operates as a complete unit because it can more efficiently do the amount of work required than when decentralized.

Special Operations

The special operation which most often concerns the engineers is the river crossing. Hasty river crossings are usually made only with division engineers, while deliberate crossings will ordinarily be made with corps engineer troops, as well. If the equipment available to the engineer unit is enough to span the river, a hasty river crossing may be ordered by the team commander. The engineers, in this case, make the reconnaissance, furnish the assault boats (42 in the division), the guides, and the three crew members per boat. As soon as accurate direct and observed fires are cleared by the assaulting infantry, the bridge is started. Under certain conditions where the river is more than four hundred feet wide and there is a need for tanks to meet a tank attack, it may be necessary to construct a ferry. However, the construction of a ferry frequently results in a dispersion of, and interference with, the engineer effort so that the bridge construction is slowed.

Under normal conditions it takes about an hour and a half to build a ferry to carry one 50-ton tank, starting with the personnel and material at the site and not including the time to build the approaches. The time for a round trip in moderate currents is about 15 minutes for 400 feet. If construction is not delayed by a ferry, the bridge will take about one hour plus one hour for every 75 feet of bridge, again not including the approaches. Additional troops can be used to decrease the time required. When the bridge is finished it is turned over to the following engineer units, as soon as possible, for guarding and maintenance.

Another special operation is the assault of fortified positions, including heavily defended cities. Here the engineer demolition and flame throwing personnel are placed in with the infantry and tank teams and assist in the destruction of the fortified positions.

In addition to these normal engineer operations, the engineers may be called upon to act as infantry. This involves a command decision and must be decided only after considering all of the factors involved. All of the engineer squad members are trained specialists—demolition, equipment operators, riggers, etc.—and are difficult to replace. The engineers have not had as much infantry training as they really need for battle. They do not have the same weapons—the automatic rifles, the recoilless rifles, and the mortars—as infantry, and as one of the most important deficiencies, they lack adequate dismounted radios. With these factors in mind, if the situation arises where the combat engineer companies must act as infantry, the platoons reorganize into three rifle squads and a light machine-gun squad made up of personnel from the platoon headquarters and the squads. At night, on an exploitation, when the combat commands form defensive positions, it is normal for the engineer companies to be assigned defensive sectors unless other duties are more pressing.

Summary

The engineer battalion of the armored division forms a part of the division team. Engineer companies are attached to combat commands to form teams within the command, frequently sending platoons to leading reinforced battalions. In order to carry out the mission more effectively, each of the team commanders must know the capabilities and limitations of all members of his team. Know your engineer battalion; it can't win the war but it can sure help.

"What's that? What about that blown bridge over the river? No, you cannot cross. You have about 76 feet of bridge on the two trucks but they will carry 50-ton tanks only over a 38-foot span. You must call for additional bridging or improvise a pier or trestle from local materials. Get those engineers up here!"

NOTICE!

The Annual Meeting
of the
U. S. ARMORED CAVALRY
ASSOCIATION
will be held
MONDAY, JANUARY 16th
at the
ARMY-NAVY CLUB
in
Washington, D. C.
at 8 P.M.

Individual notification has gone out to all members. Make every effort to attend. If you are unable to be there be sure to fill out your return card and send it to the Secretary at

1719 K Street, N.W.
Washington 6. D. C.
A Buffet will be served.

NOTICE!

Armored Cavalry Regiments Add Tactical Power to National Guard

Tactical power of the National Guard will be materially increased by the addition of light armored cavalry regiments to the troop basis, the National Guard Bureau announced recently.

Replacing units of lesser military value, eight armored cavalry regiments will be allotted to as many States. Already accepted by the States are units allotted to Idaho, Tennessee, Ohio, California, Texas, New Jersey and New York. The eighth will be allotted shortly.

New to the National Guard, the armored cavalry regiments will have a peacetime strength of 2,258 officers and men and a full strength of 2,883. The three battalions in each regiment consist of a headquarters, three reconnaissance companies, an assault gun company and a medium tank company. There are also a regimental headquarters company, service company and medical detachment. The regiments use light and medium tanks.

U. S. Navy

Adm. Forrest P. Sherman, New Chief of Naval Operations

Photo projected to size to be cut and pasted in appropriate place on chart published last issue.

The regiments, which are capable of operating and existing alone, can serve as reconnaissance or scout forces for an advancing Army and as a screening force. They have a potential range of 200 miles or more a day and a fire power of about 60 tons each.

It was also announced that in line with a policy of increasing the mobility, strength and fire power of National Guard tactical units, nondivisional medium tank battalions will be eliminated and replaced by heavy tank battalions. Involved are six battalions assigned to Alabama, Colorado, Louisiana, New Jersey and Pennsylvania.

◇ ◇ ◇

Books On Combat

The Historical Division of the Special Staff, U. S. Army, is interested in the publication of a series of books on combat in the recent war, in order that future military men may have a substantial background to assist them in their profession. Under the sponsorship of Major General Orlando Ward, it is planned to secure through each service school short articles on battle experiences which illustrate the problems in combat of various phases of branch action. This would include narratives of actions that were unsuccessful, with reasons for their failure, as well as those that were successful.

The support of each of the school commandants has been secured, and all consulted feel that there is a definite place for such books. These would be something entirely different from unit histories or those stories covering one action or campaign only.

The Armored Cavalry is of course well ahead of the field in this activity, having embarked upon such a project—the compilation of a combat book on armor in World War II—several years ago. With teams of six officers each at work on various phases of armored action, a number of narratives are completed, and discussions are well along between The Armored School and the ARMORED CAVALRY JOURNAL bearing on the publication of the book under the Armored Cavalry Journal Press imprint.

Undoubtedly much additional and very valuable material is still untapped. Those with worthy material to contribute to such a project should submit their narratives to The Armored School, Fort Knox, Kentucky, prior to April 1st. Selected narratives will be published in the ARMORED CAVALRY JOURNAL.

◇ ◇ ◇

General Crittenberger Named Deputy to General Bradley on North Atlantic Military Committee

Appointment of Lieutenant General Willis D. Crittenberger as Deputy Representative for the United States on the Military Committee of the North Atlantic Treaty Military Organization and its Standing Group was announced recently by Secretary of Defense Louis Johnson.

General Omar N. Bradley, Chairman of the United States Joint Chiefs of Staff, is the United States Military Representative on the Military Committee and also is currently serving as its Chairman.

General Crittenberger also is Chairman of the United States Delegation of the Military Staff Committee of the United Nations. He also is Chairman of the United States Army Delegation to the Inter-American Defense Board and Chairman of the Board.

◇ ◇ ◇

Guard Armored Division Complete

The National Guard Bureau recently announced that the organization of tactical units is close to completion. The 50th Armored Division of the New Jersey National Guard is now 100% complete.

◇ ◇ ◇

First Cavalry Reunion

Over the V-J Day-Labor Day week end, 2-4 September 1949, the 1st Cavalry Division Association held its reunion at Louisville, Kentucky under the auspices of a committee headed by Colonel John C. Macdonald, Lt. Colonel Willis G. Ethel and Major Joseph C. Curtin. Major General Wm. G. Livesay, the Commanding General of Fort Knox, was an honored guest and extended the hospitality of the Fort.

Buy Christmas Seals

GREETINGS 1949 USA

Help Stamp Out TB

The Honorary President of the U. S. Armored Cavalry Association, General Jonathan M. Wainwright, is an honorary member of this Association as is General of the Army Douglas MacArthur. At this year's meeting, General Walter C. Krueger, USA Ret'd, General Robert L. Eichelberger, USA, Ret'd, and General Lucian D. Truscott, USA, Ret'd and Major General Wm. G. Livesay were elected to honorary membership.

Colonel William J. Bradley, who commanded the 8th U. S. Cavalry from the Admiralty Islands to Tokyo, is now President of the Association. His present assignment is Chief of the Cavalry Branch, Career Management Group, Personnel and Administrative Division.

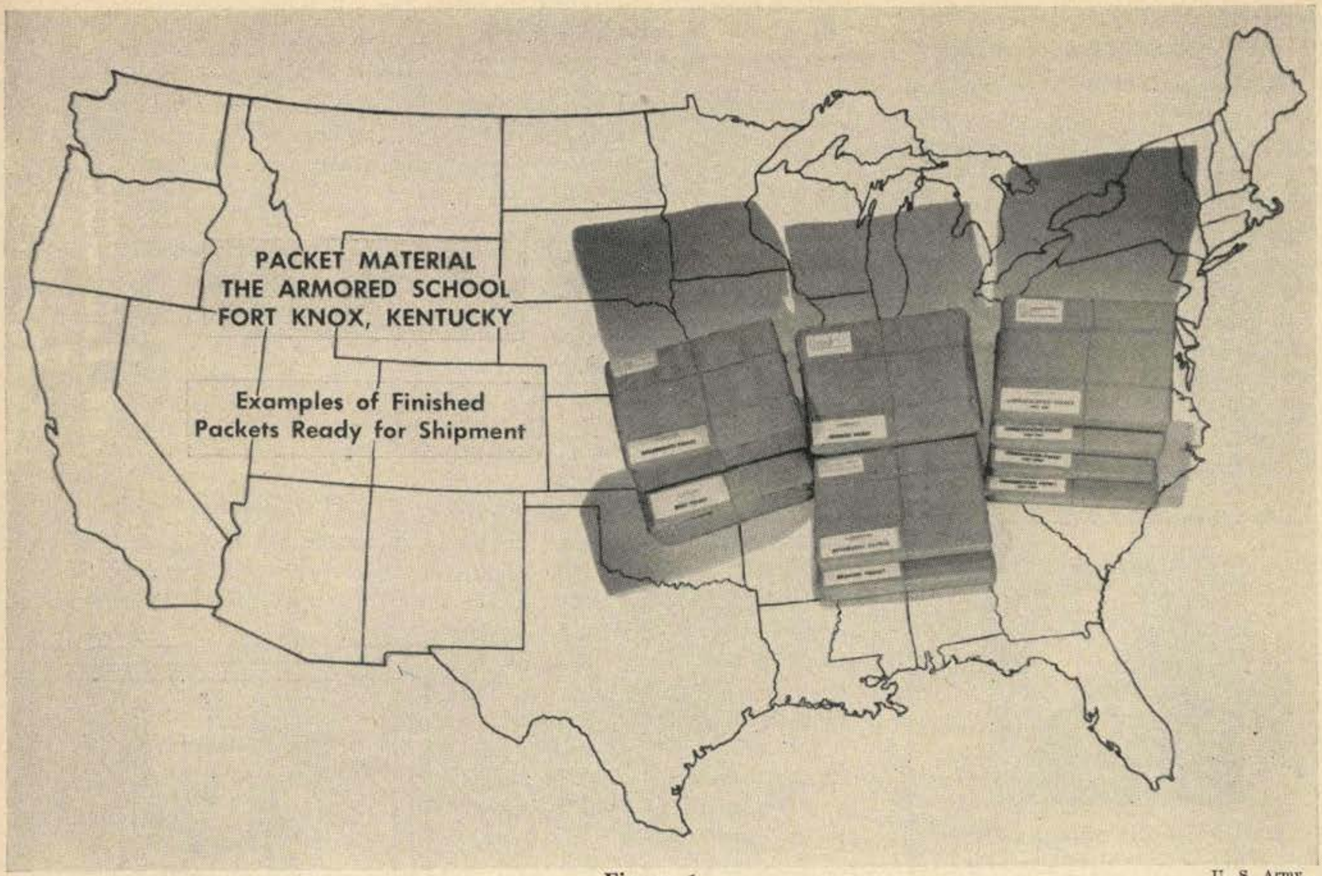


Figure 1.

U. S. Army.

The PACKET PROGRAM

by LIEUTENANT COLONEL FRANK K. BRITTON

IF you are faced with the problem of presenting armored cavalry instruction in National Guard, Organized Reserve Corps, or Reserve Officers Training Corps organizations, your teaching job has been made easier by the packet program of The Armored School.

These packets, distributed from the Home of Armor at Fort Knox, Kentucky, come free of charge and represent the most modern armored teachings as presented from the platforms of The Armored School's instructional halls.

The interest expressed in these packets by everyone deserves a report to you of the details concerning the 1948-49 program just finished and a look into the future at the 1949-50 setup.

Anyone, from platoon lieutenant to armored division commander in the civilian component program, who is engaged in the art of putting across armored instruction finds a use for these packets.

It was 18 months ago that the program had its inception—coming at a time when the Department of the Army put increased emphasis on the training activities of National Guard, Organized Reserve Corps, and Reserve Officers Training Corps.

The question was: "How can the latest doctrine of The Armored School be put into the hands of those people who have such a great need for the training literature necessary to up-to-date instruction?"

This was answered by the decision to supply training material without cost to the user and to distribute it down to company level.

The nonreimbursable and automatic distribution features were unique and without parallel, but their worth has been demonstrated by the complete coverage of armored cavalry organizations which has been achieved and the fact that approval was given to maintaining the momentum in the 1949-50 year.

At the outset, the Training Literature and Reproduction Department of The Armored School was charged with the responsibility for coordinating with academic departments to arrive at the units of instruction to be included in this program; for reproducing and packaging these units; and for coordination with the National

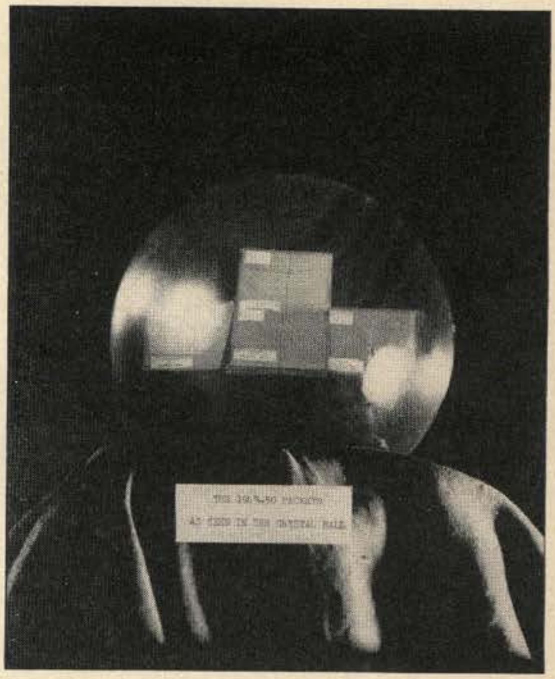
Guard, Organized Reserve Corps, and Reserve Officers Training Corps, to obtain distribution.

The plan adopted resulted in the creation of a series of packets; namely, BASIC TACTICS, INTERMEDIATE TACTICS, ADVANCED TACTICS, WEAPONS, AUTOMOTIVE, and COMMUNICATION. See figure 1.

To insure maximum effectiveness at the point where such a project was most needed, the packets were tailored to be helpful to a company commander.

In all, the 1948-49 program brought approximately 170 units of instruction to the civilian component company commander. These units, identical with instruction presented from The Armored School's platform, included the entire layout necessary to complete the pattern for class instruction. Each unit had its own lesson plan, instructor's manuscript, advance sheet, map, special text, and other literature necessary to the instruction of that particular subject. The distribution of packets to the companies included BASIC TACTICS, WEAPONS, AUTOMOTIVE, and COMMUNICATION.

The presentation of our Branch instruction in National Guard, Organized Reserve and Reserve Officers Training Corps has here an outstanding assist in The Armored School's Packet Program of instructional material.



Battalion organizations received, in addition to that material supplied to the company, an INTERMEDIATE TACTICS packet consisting of about 25 units of instruction on battalion matters, which gave them almost 200 units to use in planning the battalion training.

Combat command and division organizations received the 200 units distributed to company and battalion organizations, and in addition were given an ADVANCED TACTICS packet containing about 38 problems concerning tactical fundamentals and employment of the higher units.

The magnitude of this training literature task is emphasized when a number of factors in the background are explored. Among these were:

Utilization of labor accounted for 6000 man-hours in assembling and packaging.

Tying of the parcels required almost 15,000 miles of string, more than enough to stretch from New York to San Francisco.

Reproducing the units involved 25 tons of mimeograph paper, just about a freight car load.

Based on these experiences, the 1949-50 program should benefit and be more valuable. The current project envisions BASIC TACTICS, INTERMEDIATE TACTICS, ADVANCED TACTICS, and TECHNICAL packets. The TECHNICAL packet combines the features formerly found in the WEAPONS, AUTOMOTIVE, and COMMUNICATION packets. See figure 2.

Each of this year's packets will contain only units of instruction that are entirely new, or those from the 1948-49 packet which have been radically changed.

Distribution has been revamped to reach newly activated units as well as those on last year's listing.

The foregoing explains briefly the processes of the plan to extend armored teaching from Fort Knox to you. Possibly this article will provoke questions. Readers are invited to write for information to the Training Literature and Reproduction Department, The Armored School, Fort Knox, Kentucky.

Training Literature & Reproduction Dept.
The Armored School
Fort Knox, Ky.

Please send me information on TAS Packet Material.

Self-Trained Armored Reservists

by JOSEPH M. QUINN

A RESERVE armored division trained under the aegis of General Mark Clark before he moved up to Chief of Army Field Forces this summer proved such a unit can successfully run its own field exercises with but minor assists from the regular establishment.

The 13th Armored Division (ORC), with 274 officers and 116 enlisted men from Southern California and Arizona, conducted its two-week active duty tour in August at the Marine Corps base at Camp Pendleton, California.

At its conclusion, Brigadier General James T. Roberts complimented his civilian soldiers for the high degree of combat readiness demonstrated in the firing problems and field maneuvers and described as "an outstanding success" the experimental "semi-independent" basis under which the training was conducted.

Regular Army observers and unit instructors echoed the commanding general's views.

"Officers and men receive extensive and intensive training in the performance of their normal duties," General Roberts summed up. "I believe other reserve units will find this method the best devised yet for summer training. Only such a plan permits staff officers, unit commanders and specialists to get essential field experience."

After carefully weighing the accomplishments and deficiencies of his division's training, General Roberts made a series of recommendations which other armored unit commanders may find helpful.

Based on a combined strength of 500 officers and men, these included:

1. At least three months prior to going to camp, the unit commander should get specific information from Army headquarters on what Regular Army personnel will be furnished for housekeeping and ordnance maintenance requirements; the source and extent of logistical support; what special training will be required; and detailed administrative and security instructions.

Plotting table work at the fire direction center.

2. Once this information is firmed up, the unit commander and a staff of G-1, G-3, G-4, Adjutant General, Division Signal Officer, Headquarters Commandant, Division Ordnance Officer and Provost Marshal should confer with appropriate officers at the camp site to work out necessary coordination, determine range, training area and equipment availabilities, and other logistical support.

3. The advance party should reach camp a full week prior to arrival of the main body of troops.

4. To permit better control and simplify administration, personnel should be ordered to duty with their units, rather than as individuals.

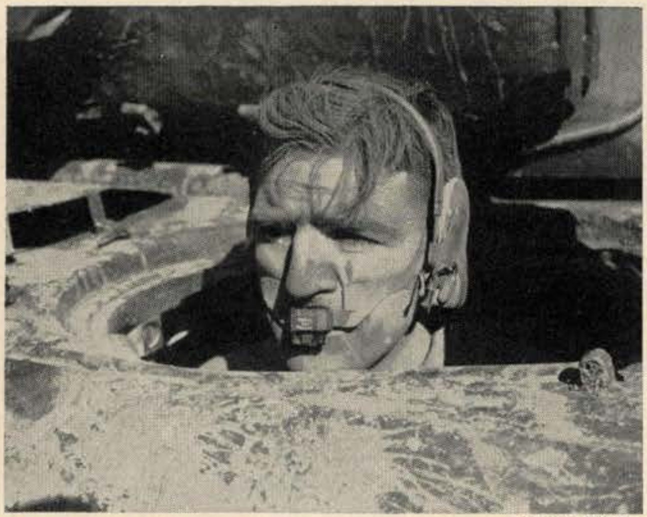
5. At least 20 tanks, with organic equipment and tools, should be available. Division artillery should have one battery of six M-37 self-propelled howitzers. Authorized ammunition should be furnished.

Tank training instruction with the M4A3.

6. Minimum transportation requirements include 15 jeeps, three ¾-ton trucks, five 2½-ton trucks, two ambulances, and three passenger busses for transporting troops to training areas.

If these six simple recommendations were carried out, the 88 duty hours could be profitably broken down on a training schedule providing for 12 hours of qualification firing of the principal individual weapons, 16 hours of firing principal organization weapons, 4 hours of combat-vehicle driving, 8 hours of combat vehicle maintenance, 8 hours of radio communications, 16 hours of separate platoon exercises, 8 hours of combined company exercises, 4 hours of combined battalion exercises, 8 hours of demonstrations, and 4 hours of administration.

General Roberts said the Regular Army should furnish a mess officer, three mess sergeants, six mess NCO's, 12 cooks, and one KP for each 20 officers and men; a guard detail of 6 to 10 men, depending upon local conditions; and an ordnance detachment of one officer and 20 qualified enlisted men to receive and process ordnance equipment.



13th AD Photo

Intercom headset, lip microphone and dust—he's a tanker!

Before going to camp a group of this size should be sufficiently well trained to start its field work the day it reports for duty, the division commander said.

General Roberts emphasized the importance of furnishing good stories and pictures to home-town newspapers and interesting news releases to radio stations. For this purpose, he recommended that an experienced newsman be named division Public Information Officer and be provided with at least two photographers, with adequate supplies and laboratory facilities.

For the "Black Cat" division's summer training, Brigadier General Leroy H. Watson, commanding the Southern Military District of Sixth Army, arranged the necessary inter-service coordination, provided the Regular Army support units and exercised general supervision. But the task of carrying out the training mission was left entirely to General Roberts and his staff and unit commanders.

Preliminary planning was accomplished during weekend training periods at Camp MacArthur. Direct liaison having been authorized, a series of conferences among division and Marine officers was held in July and early August. Preceded four days by the advance party, the division reported on August 14.

Gen. Erskine, USMC, left, and 13th's Gen. Roberts.

From the first day, the division operated as a unit, with the troops divided into four training groups: Division Troops, Tank Group, Infantry Group, and Artillery Group. A master training schedule controlled all activity.

The First Marine Division, commanded by Major General G. B. Erskine, made its housing, messing, recreational and training facilities available, and gained the admiration of the entire visiting division for its unstinted cooperation and willing assistance. A battery of Marine Corps artillerymen was attached to Division Artillery to assist in firing exercises, and the Marines staged a series of demonstrations including an amphibious assault landing, a battalion in the defense at night, and a division attack with close-in aircraft support.

The armored reservists received on-the-job training in staff and administrative duties, drove tanks, and fired 105mm howitzers, 76mm tank guns, 60 and 81mm mortars, light and heavy machine guns, and rifles. Training conditions generally were excellent.

A spectacular brush fire raged over hundreds of acres of the sprawling camp during the training period. One night a spark from the main fire started a blaze that swept to within 50 feet of five tanks parked on a range for target firing the following morning. Colonel Allan J. Stampa, Combat Command A commander, spotted the danger at midnight and routed out a rescue party of two Arizona reconnaissance men, five tank drivers and five commanders. The tanks were moved eight miles in the darkness. Two of the drivers had had only a few hours training as tank operators.

Are You Team Minded?

by MAJOR HAROLD H. DUNWOODY

ARE you a qualified *team commander?* Do you realize that in a national emergency the chances are very great that you will be either a combined arms team commander or a staff officer of a combined arms team? Such an emergency will require that you and all officers of other combat arms have knowledge of more than the tactics and techniques of your particular branch. For example, if you are an armored cavalry officer, you must know how to operate your tank platoon, company, or battalion, and in addition you must know how to utilize infantry properly, how to call for artillery fire, how to employ engineers to best advantage, and how to solve countless other problems that arise in the employment of a combined arms team.

During peacetime it is often difficult to acquire a store of knowledge about the functions of other combat arms. Units are widely scattered throughout the country; maneuvers are seldom held and are frequently little more than CPXs for higher staff officers. How, then, can an officer learn the important principles of combined arms team employment so that he can be ready in an emergency to command such a team effectively?

The Armored School has anticipated the need for such training and has emphasized it in resident instruction. Realizing further that only a small percentage of officers of the armored cavalry branch will attend resident instruction, The Armored School has incorporated "team" training in its extension course program. Through these armored extension courses, regular or civilian component officers can learn the principles of operating combined arms teams, from platoon size through combat command. AR 350-300 and SR 350-300-1 explain in full the proper methods for enrolling in these courses, which are available to every Army officer.

How is this instruction in combined arms teams treated in armored extension courses? The Armored School does not write a course on the tank company in the offense and another course on the armored infantry company in the offense; instead, a course entitled *The Reinforced Tank and Armored Infantry Companies, Offensive Action,* has been prepared. The principles of operation of both companies are thoroughly explained. Problems are written in which the reinforced company is tank-heavy and has primarily a tank mission; in other problems, the reinforced company is infantry-heavy and is employed on an infantry mission. In these problems, you, as team commander, may command either an infantry company with tanks attached or a tank company with infantry attached. Such exercises are valuable in that they teach you the employment of both types of ground arms and instill in you an appreciation of the problems, capabilities, and limitations of branches other than your own. Similar courses are written on the battalion level and on the combat command level.

These courses on tank and infantry units are but one type of the armored courses designed to teach team operation. There is another type written by The Armored School which serves to teach you the use and role of supporting arms. Such courses are not designed to make you an artilleryman or an engineer, nor an expert in any of the other supporting arms, but rather to teach you what such supporting units can do and how they fit into the team pattern. In other words, the armored course, *Field Artillery in Support of Armored Units,* is written primarily to answer this question: "What can the artillery do for me in an attack or in the defense?" The artillery is as much a part of the team as are the leading tanks or infantry, and for you to be a successful team commander it is equally important that you understand well the functions of the artillery in support of your team. Your understanding of the armored engineers must also be thorough because each tank-armored infantry battalion team normally has at least one platoon of armored engineers in support. You, as the team commander, will be responsible for the proper employment of this supporting force. In order that you do understand the employment of the engineers, The Armored School has prepared a course entitled *The Armored Engineer Battalion.* This course covers the organization, capabilities, and limitations of the armored engineers, and explains how they perform supporting roles in support of armored team tactics.

Armored courses are by no means confined to discussions of the ground arms. In modern warfare, almost any operation is a special operation requiring the coordination and cooperation of the Army, Air Force, and Navy. In recognition of this important fact The Armored School has expanded the team principle to include a course on *Air-Ground*

Major Harold H. Dunwoody for the past two and a half years has been chief editor of the Extension Course Department, The Armored School. He graduated from United States Military Academy in June 1943 and subsequently served as a company officer and combat command staff officer in the 14th Armored Division. At the present time Major Dunwoody is a student of the Advanced Class, The Armored School.

Cooperation. The need for close cooperation between attacking ground formations and supporting air need hardly be discussed here; however, this course teaches you how such cooperation is achieved, how the ground team commander can call for air support, and what support he can expect under certain conditions. To illustrate how coordination with the Navy is achieved, a course entitled *Amphibious Operations* has been prepared by The Armored School. This course not only shows the vast and complicated staff planning problems of an amphibious operation but also illustrates what decisions you as a combined arms team commander will have to make in planning the loading of your team, in pre-embarkation training, and during the actual operation. A hypothetical invasion has been worked out in this course to make training in this important phase of warfare more realistic. Along the same line, courses have been written to show the principles of team fighting in jungles, deserts, towns, and mountains, as well as in river crossings and night fighting.

Even in such specialized courses as supply, maintenance, and communication, team operation has always been borne in mind by The Armored School. For instance, supply problems are drawn to make you determine the types and quantities of supplies and equipment necessary for your team—not just your tank company or infantry company—to operate. The same principle has been carried out in communication courses; you must consider what communication facilities are necessary for the successful operation of your team.

The Armored School firmly believes that no commander in any future war will be successful unless he thoroughly understands the capacities of other branches. Before World War II the understanding of such teamwork was required only of regimental and division staff officers; but that war graphically illustrated the need for team operation at the platoon and even the squad level. The time to develop the spirit of the team is *now*. The spirit must extend from the lowest level of command to the highest so that in any future conflict such a spirit and understanding will be natural and automatic. As previously explained, the opportunity for team participation during peacetime is limited. The Armored School offers you the opportunity, through its extension course program, to be fully prepared to assume successfully responsibility for any armored team of the combined arms.

For application blanks write:
Extension Course Department
The Armored School
Fort Knox, Kentucky

Anniversary!

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To the Editor:

Armored Cavalry Journal
1719 K Street, N.W.
Washington 6, D. C.

ON BEHALF OF THE SECOND ARMY, I EXTEND SINCERE BEST WISHES TO THE OFFICERS, MEN AND WOMEN OF THE ARMORED CAVALRY ON THE ONE HUNDRED SEVENTY THIRD ANNIVERSARY OF THE ORGANIZATION OF THE UNITED STATES CAVALRY. THE SECOND ARMY CONGRATULATES THE CAVALRY ON ITS SPLENDID RECORD OF ACCOMPLISHMENTS.

/s/ GEROW

From:

Commanding General
Second Army
Fort George G. Meade, Md.

THANK YOU GENERAL GEROW

★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★

Squad leaders, 3d Platoon, 24th Recon Company, 24th Infantry Division, receive an attack plan from their platoon leader in Armored Cavalry tests.

Patrol leader of 24th Recon Company scans route for sign of enemy while armored car waits in defilade in test competition.

ARMORED CAVALRY LEADERSHIP TESTS

Trophies to winners in the Armored Cavalry Leadership Tests held recently in the Far East Command were presented at Eighth Army Headquarters, by Lt. Gen. Walton H. Walker, Commanding General Eighth Army.

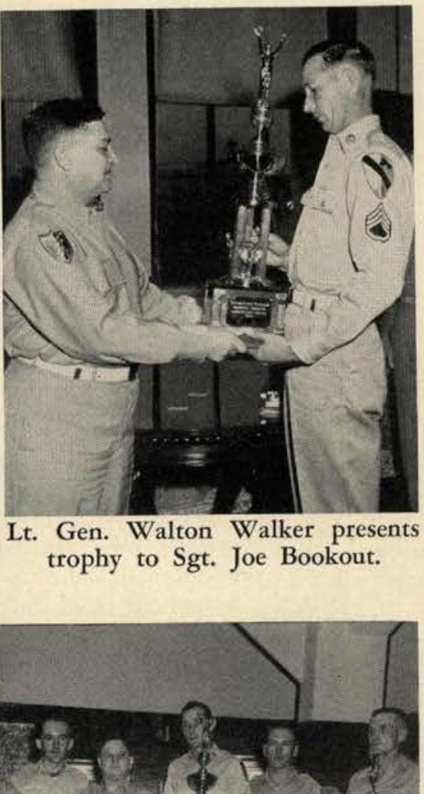
The first place trophy was presented to 1st Lt. Oscar W. Traber, of Natchitoches, La., leader of the First Platoon, 25th Reconnaissance Company, 25th Infantry Division. The team trophy was presented to M/Sgt Joseph J. Zupan, of Daisytown, Pa., platoon sergeant.

Individual trophies also were presented to 1st Lt. Arnold W. Mahlum, of Los Angeles, Calif., who commanded the second place First Platoon, 16th Reconnaissance Company, 1st Cavalry Division and to 1st Lt. William F. Coghill, of Nenana, Alaska, leader of the Third Platoon, 24th Reconnaissance Company, 24th Infantry Division which placed third.

Platoon trophies for second and third place were presented to Sgt. J. J. Bookout, of St. Louis, Mo., and to M/Sgt. James M. Downs, of Hope, Ark., platoon sergeants of the second and third place platoons, respectively.

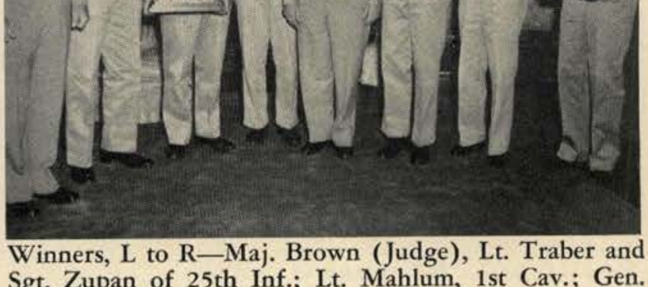
Individual awards to platoon sergeants and to members of the winning platoons were made at ceremonies held on a Division Level. A total of $1,500 in prizes was awarded, with $750 going to the first place platoon, $500 to the second, and $250 to the third place winners. The prize money is taken from a fund set up in 1928.

The trust fund was established for the promotion and development of combat leadership in the Cavalry. The Chief, Army Field Forces, is charged with the allocation of the interest on this fund. In 1947, Armored Cavalry units competed for this award within the Zone of the Interior. In 1948 it was allocated to the Constabulary in the European Command. This year, $1,500 was allotted to FEC and Eighth Army was charged with the conduct of competition.



Lt. Gen. Walton Walker presents trophy to Sgt. Joe Bookout.

The judges and the trophies. Maj. Charles Brown and Maj. Warren Harvey of First Corps; Lt. Francis Cancelliere of First Cavalry and Lt. Spencer Halgren, 24th Infantry.



Winners, L to R—Maj. Brown (Judge), Lt. Traber and Sgt. Zupan of 25th Inf.; Lt. Mahlum, 1st Cav.; Gen. Walker; Sgt. Bookout of 1st Cav.; Lt. Coghill and Sgt. Downs of 24th Inf.

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GERMANY: A WHOLE IS BETTER THAN TWO HALVES

THE STRUGGLE FOR GERMANY. By Drew Middleton. 281 pp. The Bobbs-Merrill Company. $3.00.

A Review By
H. V. Kaltenborn

Regular readers of Drew Middleton's authoritative *New York Times* dispatches would naturally welcome any book he might write on Germany. Middleton is, above all, a first-class reporter. His point of view on Germany is balanced. It is based on the facts he has observed and studied during and since the war. He went into Germany with our armed forces and reported the collapse of Hitler's war machine.

The Author

N. Y. Times

Drew Middleton, shown in the uniform of war correspondent, covered the collapse of the Nazi war machine. In the postwar period he has covered the Soviet Union and Germany for the *New York Times*, and is head of the *Times* Berlin Bureau. His dispatches currently appearing in the daily and Sunday editions of that paper complement his book on this key problem of our day.

Much more than those who have not lived in postwar Germany, he is conscious of that country's utter and complete psychological and physical defeat and devastation. While he has no illusions about renascent German nationalism and the natural German desire to play once more an important role in world affairs, he knows that things are not the same as after the First World War. In his book, he points out the great difference between the postwar Germany of the 20's and the postwar Germany of today. The effect of two successive defeats, the loss of territory, the division between East and West, the physical destruction of German cities are all important new factors that will long delay the possible renascence of a powerful independent Germany.

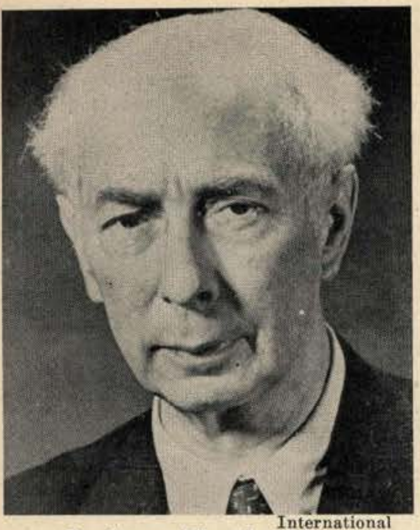
Drew Middleton has one great advantage over most students of war's effects in Central Europe. Following several years as chief correspondent in Germany for the *New York Times*, he became that paper's chief correspondent in the Soviet Union. This broadening experience enabled him to realize that while Germany may become dangerous in some distant tomorrow, the Soviet Union is desperately dangerous today. That is why the burden of his book THE STRUGGLE FOR GERMANY is implied in the title. He does not believe that Germany will remain divided between East and West for many years to come. Germany, he predicts, will soon be reunited as a Communist or Democratic state. He is confident that if the Western Powers act realistically, Germany will prefer the democratic way of life.

An Exclusive Journal Feature

The Reviewer

H. V. Kaltenborn needs no introduction to our readers, many of whom are regular listeners to his nationwide radio commentary, Kaltenborn Edits the News. Long familiar as the Dean of American News Commentators, Mr. Kaltenborn has for many years reported on the German scene from a wide background based in on-the-spot coverage and personal contact with most of the leading continental personalities.

Germany, he says, will come back —but not all the way. Tomorrow's Germany, as he sees it, will be far from possessing that power for good or evil which she held in 1914 and 1939. To some extent this will be due to the moral and material destruction which the war brought to German industry and to the German people. But beyond that, the rise of the Soviet Union and the United States as two world powers infinitely greater than any possible postwar Germany will rule out any German pretense at European domination. A whole generation of young Germans



International

Professor Theodor Heuss
West Germany's President

was destroyed by the war. Two terrible blood baths within a generation are bound to cripple the German race for decades to come. Germany still has a limited amount of makeweight power. But for a long time she will have little independent power.

The issue which faced the Allies in 1945 was how Germany could best be forced to expiate her crimes against mankind. Should she be left to remain an industrial desert and seek to support her population as an agricultural country? That was the Morgenthau Plan which found much favor with those who had a natural desire for revenge and who wished once and for all to remove the German menace.

In his opening chapters, Drew Middleton raises the question as to who would then keep Germans alive? The United States, twice drawn into war by German aggression, naturally wanted a weak Germany. Yet, from the first, we had serious doubts as to whether a weak Germany would be good either for Europe or the United States. And before long we also realized that it was costing us nearly one billion dollars a year to hold Germany down. The British were already willing to accept a stronger Germany than was palatable to the French. As for the Russians, Middleton sums up their attitude in the phrase: "The Russians wanted Germany and still do."

Throughout his ten tight-packed chapters, Middleton is always careful to distinguish what might be desirable from what is practical. Having seen with his own eyes the result of Nazi terror, he is perfectly willing to see all Germans endure some measure of punishment for the crimes which most of them disclaim. But as a student of the hard facts of present-day Europe, he knows that hatred and a spirit of revenge are the worst possible counselors on postwar policy. And always he has in mind what would happen to Europe if, because of our mistakes, the Soviet Union should be able to make all Germany into a satellite Communist state.

Acme

Dr. Konrad Adenauer
West Germany's Premier

International

West Germany's Chancellor Adenauer and the Allied High Commissioners: John J. McCloy, U. S.; Sir Brian Robertson, Britain; Francois-Poncet, France.

Even after the Morganthau Plan was abandoned, we continued to believe in a hard peace. Our aim was to permit the revival of only so much of the German economy as could meet the requirements of the Occupation forces "and keep the German Society just ticking over." There was to be just enough production to ward off disease and starvation.

Middleton points out the mistakes that were made at Potsdam soon after fighting ended. These are naturally much clearer today than they were when the decisions were made in the summer of 1945. Potsdam called for the disarmament of a Germany that was already disarmed. Denazification had been accomplished by victory. The decisions at Potsdam on denazification were largely superfluous. Middleton is also dubious about the salutary effects of the war crimes trials but he presents both sides of the argument.

He is too generous in his estimate of our efforts to democratize the Germans. My own feeling has always been that a belief in democracy can never be imposed through an army of occupation. This must grow in the hearts and minds of a people as the result of experience. Germans are not true democrats today—at least in our sense of the word—and will not be for many years to come. Since Napoleon's day they have known the meaning of freedom but they do not identify it with democratic government. They have accepted the democratic forms as probably better than

Wide World

Otto Grotewohl
East Germany's Premier

what they had under the Kaiser and certainly better than what they had under Hitler—but they are not at all sure how well the new forms will work. Nor can we be sure in view of the enormous difficulties which face a divided Germany.

Middleton quotes a military government officer in Bavaria who put it to him this way: "We may have convinced Anton and Alois the farmer and the carpenter, that they should have a share in the way their village and their county and country are run. But I am damned if I think we have made much headway with the big boys."

Middleton has little sympathy with the French attitude towards Germany. He sees the French little more capable of handling a Fourth Reich than they were in handling the Third. He says: "The question France must ask itself in the future is whether the penalties exacted of Germany now may not prove the motivation in the future for a new revival of German nationalism and the establishment of another German predatory state."

Middleton realizes as all of us do who have studied the Franco-German problem, that French internal politics make it difficult for any French government to be reasonable and sensible in dealing with this German problem. Today, it is General DeGaulle and the Communists who cry out against any French Government concession that would help us make Germany self-supporting, but that would inevitably increase her economic strength. I well remember interviewing both Streseman and Briand during a postwar summer a quarter century ago. Streseman told me how much he needed a little help from the Allies to strengthen the young German Republic against its internal nationalist and Communist enemies. He wanted a few concessions on reparations. I carried his demands to the French Foreign Minister. Aristide Briand told me how much he would like to do what Streseman asked but the internal political situation in France made it impossible. "Streseman must be patient," he said. "I must move very slowly and carefully if I am to retain power."

Middleton blames the French more than the Russians for the failure to bring about the economic union of Germany agreed to at Potsdam. He believes that if this particular provision of the Potsdam Agreement had been carried into effect at once, Russia's political grip on the Germans of the Eastern Zone would have been very much weakened. But since it has been weakened anyhow by the failure of the Russian blockade, the long-run result of French intransigence may not be important except in Franco-German relations. It was the defeat of the 1948 Berlin blockade by the Airlift that gave the West what may well prove the decisive victory over the Soviet Union in the struggle for Germany.

Wide World

Wilhelm Pieck
East Germany's President

The French have never given proper weight to the American contribution to German recovery. In their almost pathological fear of German revival, they forget that while this has been brought about in part by internal German effort, it is due primarily to America's dollar contributions. In 1948 alone, the U.S. contributed 1 billion, 150 million dollars to German economy. Many Frenchmen and some foolish Americans believed, as Middleton puts it, "That all Germans with any aspirations for the return of Germany's sovereignty and unity were new Bismarcks and

ES LEBE
DIE NATIONALE FRONT
DES DEMOKRATISCHEN
DEUTSCHLAND

Wide World

A meeting of the "People's Council" of the East "German Democratic Republic."

Hitlers planning some fresh aggression."

British military government is credited with both competence and sagacity. It stood in sharp contrast with the French efforts to enforce the Morgenthau Plan, to lop off the Ruhr from Germany, and to add economic to political decentralization. But there is much evidence to show that the British fear of German competition in world markets had much to do with Britain's Ruhr policy and with her continued insistence on dismantling German industrial plants long after such dismantling was necessary or sound policy.

Middleton sees no chance for a really prosperous Germany for some time to come. He predicts an early levelling off in German production and cites the continued desperately poor living conditions in the Ruhr area to prove we have more to fear from the inroads of Communism than from the development in Germany of any excessive industrial power.

Economic union with areas behind the Iron Curtain will always prove attractive to many Germans. This traditional concept of an East-West economic exchange, raw materials for industrial products, has been popular since Bismarck's day. We ourselves agree that ultimate Marshall Plan success depends on trade between Central Europe and Eastern Europe.

For the moment, Russia's failure in Eastern Germany and Allied successes in Western Germany pull most Germans to the West. In surveying future possibilities, Middleton concludes that continued Western efforts to draw the German Federal Republic into the Atlantic community will result in the integration of a united and democratic Germany with the democratic West. There is always a chance that when the Russians realize their failure in Eastern Germany, they will cut their losses and withdraw their pressure from a United German State, perhaps as the result of concessions we make elsewhere. Yet, even if this happened, the Western limits of the Communist Empire would still be only 40 miles East of Berlin. This, together with Germany's need of Eastern trade, would always give Moscow a strong influence on German affairs.

The American military men who have worked in Germany will not like Middleton's stress on what he thinks were some of their mistakes. He blames them for emphasizing the economic rather than the political side of their mission. He thinks they permitted too many former Nazis to come into prominent position in the new government of Bavaria. He sees few constructive results of our efforts to educate the Germans in the democratic way of life.

But isn't he asking too much of an army of occupation? Could any group of Americans have done much better? I doubt it. Germans, as Middleton points out, have remained Germans. A few thousand Americans performing a rather thankless task for the period of five years could hardly expect to change the mentality of 50 million Germans. The two bitter and decisive defeats which followed Bismark's three easy victories have begun to produce an important change on the German mind. The utter impossibility for many years of any successful German war of aggression will do much to reorient German mentality. The worst thing that could happen is that we would ask and receive Germany's help in defeating the Soviet Union in another war. The best that could happen is that we would ask and receive German help in continuing our victories in the Cold War. If democracy can continue to prove itself stronger than totalitarianism, the Germans will continue to accept it as the better way of life.

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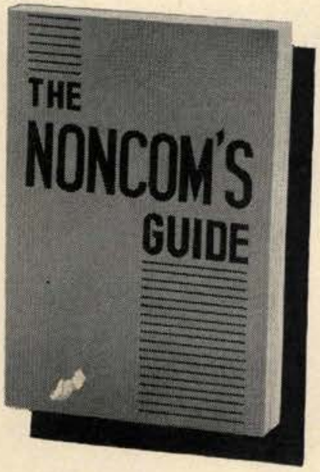

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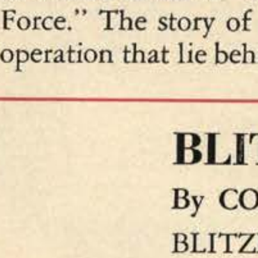

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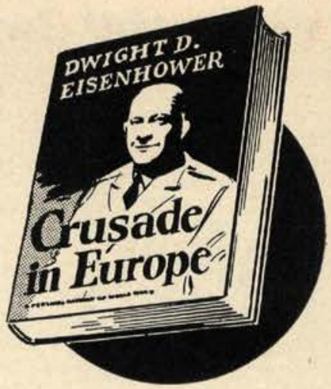
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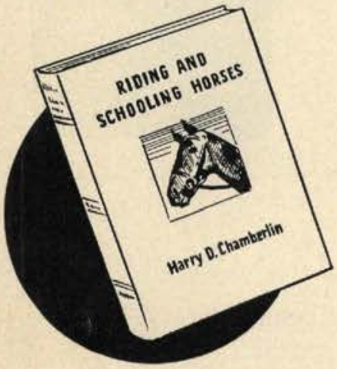
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